THE ECHINODERM NEWSLETTER

Number 15. February 1989

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Tampa, Florida 33620, U. S. A.

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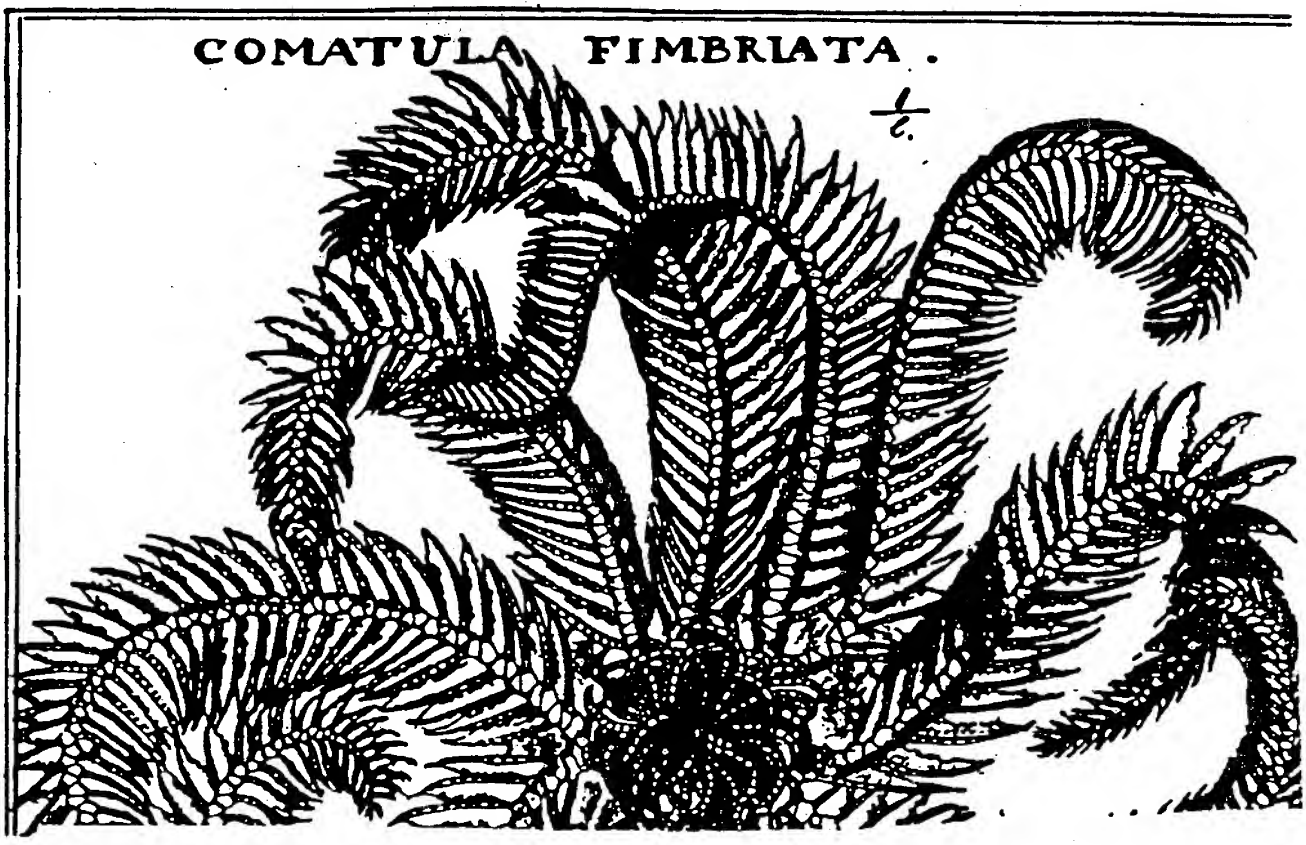
National Museum of Natural History
Smithsonian Institution
Washington, D. C. 20560, U. S. A.
(David Pawson)

The newsletter contains information concerning meetings and conferences, publications of interest to echinoderm biologists, titles of these echinoderms, and research interests and addresses of echinoderm biologists. The last page of the newsletter is a form which can be sent to the editor by individuals who desire to be added to the list of echinoderm specialists published in this newsletter.

The newsletter is not intended to be a part of the scientific literature and should not be cited, abstracted, or reprinted as a published document.



J.S. Miller. 1821. A natural history of the Crinoidea, or lily-shaped animals.

CONTENTS

第7回 国際棘皮動物学会議
1990年 日本

場　所: シャトーテル赤根崎(熱海, 静岡県, 日本)
開催日程: 1990年 9月9日(日) - 9月14日(金)

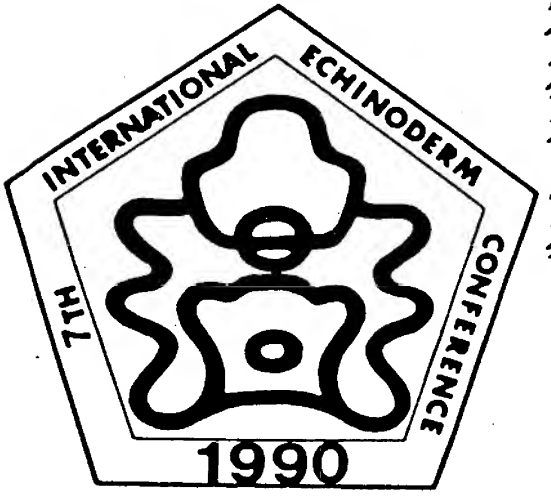
組織委員: 団　勝磨 (名誉委員長)
柳沢冨雄 (東京都立大学) 組織委員長
安増郁夫 (早稲田大学) 会計委員
鈴木範男 (金沢大学) 書記
雨宮昭南 (東京大学)
菊池泰二 (九州大学)
本川達雄 (琉球大学)
小黒千足 (富山大学)
高橋景一 (東京大学)

第1号のサーキュラーは 1989年3月中に発送されます(国内外). 応募用紙, アブストラクト, 締切, 宿泊その他の詳細は, 1989年11月に発送されるサーキュラーの第2号にのる予定です.

事務局: 国際棘皮動物学会議事務局
鈴木範男, 927-05 石川県内浦町小木
金沢大学理学部付属能登臨海実験所
PHONE 07687-4-1151, FAX 0768-74-1664

過去の会議:

第1回	1972年	ワシントンD.C., アメリカ
第2回	1975年	ロベンシュ, ユーゴスラビア
第3回	1978年	シドニー, オーストラリア
第4回	1981年	タンパ, アメリカ
第5回	1984年	ガルウェー, アイルランド
第6回	1987年	ビクトリア, カナダ



VII INTERNATIONAL ECHINODERM CONFERENCE

1990 JAPAN

Site: Atami, Shizuoka Prefecture, Japan
Date: Sunday, 9 September to Friday, 14 September, 1990

Organizing committee:

K. Dan	(Honorary chairman)	
T. Yanagisawa	(Tokyo Metropolitan University)	Chairman
I. Yasumasu	(Waseda University)	Treasurer
N. Suzuki	(Kanazawa University)	Secretary
S. Amemiya	(University of Tokyo)	
T. Kikuchi	(Kyushu University)	
T. Motokawa	(University of the Ryukyus)	
C. Ogura	(Toyama University)	
K. Takahashi	(University of Tokyo)	

The first circular will be issued in March 1989. Details will be announced in the second circular which is scheduled to appear in November 1989.

For information, please write: Dr. Norio Suzuki
Noto Marine Laboratory
Kanazawa University
Ogi, Uchiura, Ishikawa 927-05
Japan
Telephone: 0768-74-1151; FAX: 0768-74-1664

Previous conferences:
1972 Washington, D.C., U.S.A.
1975 Rovinj, Yugoslavia
1978 Sydney, Australia
1981 Tampa Bay, U.S.A.
1984 Galway, Ireland
1987 Victoria, Canada

The Fourth International Congress of Systematic and Evolutionary Biology

"The Unity of Evolutionary Biology"

1-7 July 1990, University of Maryland, College Park, Maryland, U.S.A.

To request information, please write: Congress Secretary
Department of Biology
University of Maryland
College Park, Maryland 20742, U.S.A.

ADDITIONS TO THE LIST OF ECHINODERM SPECIALISTS

THOSE WHOSE NAMES HAVE NOT BEEN INCLUDED IN PAST LISTS OR WHO HAVE HAD A CHANGE OF ADDRESS OR REQUESTS OR INFORMATION FOR THE NEXT NEWSLETTER CAN USE THE LAST PAGE OF THIS NEWSLETTER TO SEND THE INFORMATION TO THE EDITOR.

Code (areas of interest)

1 asteroids
2 ophiuroids
3 echinoids
4 holothuroids
5 crinoids
6 blastoids
7 edrioasteroids
8 stylophorans
9 paleontology
10 ecology
11 behavior
12 physiology
13 biochemistry
14 embryology, developmental biology
15 systematics
16 anatomy
17 functional morphology
18 reproduction
19 larvae
20 evolution
21 biogeography

Andrew, N. Department of Zoology, University of Sydney, N.S.W. 2006, Australia. 3,10

Benzies, John, Australian Institute of Marine Science, PMB 3, Townsville M.C. Queensland, 4810 Australia. 1,10,19

Byrne, M. Department of Zoology, University of Sydney, Sydney, NSW, Australia. 2, 3,4, 10, 11, 12,17,18

Canicatti', C., Dept. de Biologie, Universite de Lecce, 73100 Lecce, Italy. 4,13

Castro, J. C. Universidad del Norte, Departamento Biologia Marina, Sede Coquiibo, Chile. 3, 10

Deutzmann, H., Stueckerstr. 4, 4000 Duesselforf, Federal Republic of Germany. 1, 15.

Ebert, T. Department of Biology, San Diego State University, San Diego, CA 92182, USA. 3, 10, 17

Eylers, J.P. Department of Pharmacology, Box 3813, Duke University Medical Center, Durham, NC 27710. 1, 11, 16, 17

Fox, D.J., Zoology Department, University of Tennessee, Knoxville, TN 37996-0810. 2, 12, 13,14, 15, 16, 17

Gordon, C.M. Geology Department. University of the West Indies, Mona, Kingston 7, Jamaica. 2, 3, 9, 15, 20, 21

Guisado Aranguiz, Chita B., Instituto de Zoologia, Universidad Austral de Chile, Casilla 567, Valdivia, Chile. 3, 14, 18, 19

Gluchowski, Edward, Department of Earth Sciences, Silesian University, Mielczarskiego Str. 60, 41-200 Sosnoviec, Poland. 5, 10, 19

Haude, R. Institut u. Museum f. Geologie u. Palaontology, Goldschmidt-Str. 3, D-3400 Gottingen. 1,2,3,4,5,6,8,9,15,17

Kyte, M.A. 11025-44th Street SE, Snohomish, WA 98290. 2,15,18

McClanahan, T.R., Center for Wetlands, University of Florida, Gainesville, FL 32601. 3, 10

Moran, P.J., Australian Institute of Marine Sciences, PMB 3, Townsville M.C. Queensland 4810, Australia. 1,10,18,19.

McEuen, F.S. 3234 V St., S.E., Auburn, WA 98002, USA. 4, 10, 11, 14, 18, 19

Nebelsick, J. Institut f. Palaontologie, Universitat Wien, A-1090 Wien I., Universitatstr 7, Austria. 3, 9, 15

Pasamonte, J.N.., Marine Science Institute, University of the Philippines, PO Box 1, Diliman, Quezon City, Philippines. 3, 10,

Regnault, Serge. Museum d'histoire Naturelle, 12 rue Voltaire, 4400 Nantes, France. 8, 9, 10, 15, 17, 20, 21

Rezende Ventura, Carlos Renato, Deparro. de Biologia Marinha, UFRJ, BL. A, CCS, Ilha do Fundao, Rio de Janeiro, RU 21910, Brasil. 1, 10,

Roux, M., Universite de Reims, Laboratoire de Geologie, BP 347, 51062 Reims Deces, France. 5, 9, 10, [illegible], 21

Schroeder, S. 2270 Camino Vida Roble, Carlsbad, California 92009. 3,10

Salvat, Mariana B., Universidad de Buenos Aires, Fac. de Ciencias Exactas y Naturales, Dept. de Ciencias Biologicas, Ciudad Universitaria, PAB II, 1428 Capital, Argentina. 1, 14, 16.

Sewell, Mary. Dept. Zoology, Univ. Alberta, Edmonton, Alberta T6G 2E9, Canada. 4, 10, 14, 18, 19

Stephenson, D.G., Department of Geology, University of Keele, Keele, Staffordshire, ST5 5BG, England. 3, 5, 9, 20, 21

Suzuki, Norio, Noto Marine Laboratory, Ogi, Uchiura, Ishikawa 927-05, Japan. 3, 13, 14,15,18

Durbaum, Johannes, Ostermanns Weg 5, 4830 Gutersloh, Federal Republic of Germany. 1,3,10,11,15,16,17,18,21.

Tyler, P. Department of Oceanography, The University, Southam,pton S09 5NH, UK. 1,2,3,4,5,10,18.

Yoshiro, Krauroshi, Dept. of Biology, Tokyo Metropolitan University, Setagaya-ku, Tokyo, Japan. 1,2,3,4,5,6,7,8,11,12,13,17.

O'Laughlin, P. Mark, Treacy Centre, 126 The Avenue, Parkville 3052, Victoria, Australia. 1,2,3,4,5,16.

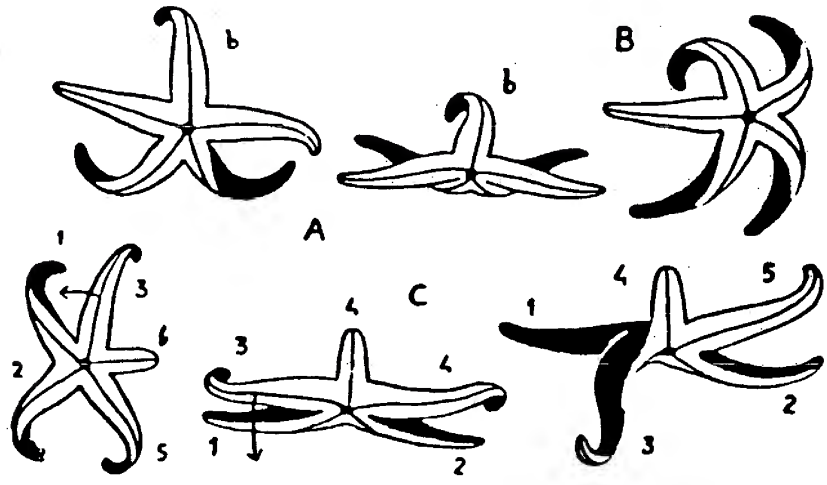


Fig. 3 — Raddrizzamento di *Echinaster sepositus* Retz.
A-B: normale somersault. In A il braccio b è l'ultimo a tornare in posizione normale. C: le braccia 1-2 vengono torte, 3 si sposta secondo la freccia, 4 è l'ultimo a posare raddrizzato sul fondo.

Tortonese, 1950

JOB ANNOUNCEMENT

CURATORIAL ASSISTANT (INVERTEBRATES)
LOS ANGELES COUNTY MUSEUM OF NATURAL HISTORY

POSITION AVAILABLE: Full-time curatorial assistant to work in the Section of Invertebrates, to assist the curator of echinoderms and visiting scientists.

DUTIES: Management of the museum's echinoderm collections including routine curation, sorting and identifying specimens, computer cataloguing, maintaining laboratory records, ordering scientific supplies, and assisting with research projects.

APPLICATION: Send letter of application, two letters of recommendation, and transcripts to: Dr. Gordon Hendler, Natural History Museum, 900 Exposition Boulevard, Los Angeles, CA 90007. Telephone: (213)-744-6391.

MINIMUM QUALIFICATIONS: Bachelor's or Master's degree in biology, marine science, or equivalent experience.

STARTING SALARY: $21, 578 per year.

STARTING DATE: After June 1, 1989. Open until filled.

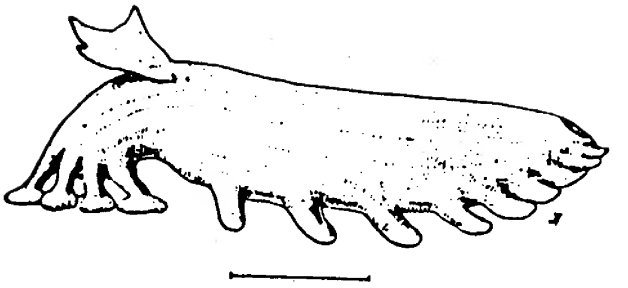


Fig. 12. *Peniagone vedeli*. (Julie Tesch del.).

Hansen. 1956

BOOKS ON ECHIODERMS

Conand, C. 1986. Les ressources halieutiques des pays insulaires du Pacifique. Deuxieme partie: Les holothuries. FAO Document Technique sur les Peches 272.2. (An English translation will appear in 1989)

Chamberlain, J.B. et al. The sea urchin: molecular biology. vol. 2. Irvington.

Guidice, G. 1985. The sea urchin embryo, a developmental biology system. Springer-Verlag.

Guidice, G. 1973. Developmental biology of the sea urchin embryo. Academic Press.

Stearns, L. 1974. Sea urchin development: Cellular and molecular aspects. van Nostrand, Reinhold

Terman, S.A. et al. 1973. The sea urchin: molecular biology. vol. 3. Irvington.

Pawson, D.P., J.E. Miller. Systematics and ecology of the sea-urchin genus Centrostephanus (Echinodermata, Echinoidea) from the Atlantic and eastern Pacific Oceans. Smithsonian Contributions to the Marine Sciences, No. 20. ISBN 0-317-29916-6, 2021766). Bks Demand UMI.

Raymond, R. 1986. Starfish wars: coral death and the crown-of-thorns. MacMillan, Australia. (a popular account)

Van Blaricom, G.R., J.A. Estes (eds.). 1988. The community ecology of sea otters. Springer-Verlag, Berlin.
This volume developed from a symposium on the community effects of foraging by se otters that was held during the 66th annual meeting of the Western Society of Naturalists in 1985. The book was intended to cover all categories of habitat in which sea otters have an effect: particulate substrata, rocky intertidal, and kelp forests. Sea otters eat sea urchins in the latter two habitats. Because of the important role of sea urchins as herbivores, their control by sea otters predation is thought to affect the community. The editors point out that a consensus on the role of sea otters does not exist and conclude that data on their role are still inadequate.
Van Blaricom & Estes. Introduction
Riedman & Estes. A review of history, distribution, and foraging ecology.
Kvitek & Oliver. Sea otter foraging habits and effects on prey populations and communities in soft-bottom environments.

Lawrence, J.M. 1988. A functional biology of echinoderms.
Croom Helm, Provident House, Burrell Row, Beckenham, Kent BR3 1AT, England
In North America: The Johns Hopkins University Press, 701 West 40th Street, Baltimore, Maryland 21211.

Van Blaricom. Effects of foraging by sea otters on mussel-dominated intertidal communities.
Foster & Schiel. Kelp communities and sea otters: keystone species or just another brock in the wall.
Estes & Harrold. Sea otters, sea urchins, and kelp beds: some questions of scale.
Laur, Ebeling, & Coon. Effects of sea otter foraging on subtidal reef communities off central California.
Ebling & Laur. Fish populations in kelp forests without sea otters: effects of sever storm damage and destructive sea urchin grazing.
Duggins. The effects of kelp forests on nearshore environments: biomass, detritus, and altered flow.
Levin. Sea otters and nearshore benthic communities: a theoretical perspective.
Estes & VanBlaricom. Concluding remarks.

Jefferies, R.P.S. 1986. The ancestry of the vertebrates. British Museum (Natural History). (Cromwell Road, London SW7 5BD)
Jefferies derives the vertebrates from the calcichordates, a group found in rocks of the Cambrian and Devonian. He discusses phylogenetic reconstruction, discusses the anatomy and embryology of extant primitive vertebrates and the anatomy of the calcichordates.

Cherbonnier, G. 1988. Echinodermes: Holothurides. Faune de Madagascar 70. Editions de l'ORSTOM, Paris. (70-74 route d'Aulnay, 93140 BONDY, France)
122 species are described, 47 of them new. Spicules from different parts of the body are illlustrated for each species. Some information on the anatomy and ecology is given. A glossary of holothuroid terminology is given. A key is provided to the orders, families, general, subgenera and species. Biogeographic conclusions are given.

Cherbonnier, G., A. Guille. Echinodermes: Ophiurides. Faune de Madagascar. 48. Editions de l'ORSTOM.

Cannon, L.R.G., H. Silver. 1986. Sea cucumbers of Northern Australia. Queensland Museum. (Queensland Cultural Center, PO Box 300, South Brisbane, QLD 4101, Australia.
Picture keys (morphology and spicules) are given to families and genera. Descriptions of 79 species and an indication where they are found are given. Figures of the body and spicules are given for some species. Colored illustrations of 34 species are very nice. A brief treatment of holothuroid biology, the beche-de-mer fishery, and three Chinese recipes ends the book.

Jangoux, M., J.M. Lawrence. (eds.). 1983. Echinoderm Studies 1. A.A. Balkema, Rotterdam. (PO Box 1675,3000 BR, Rotterdam)
Sprinkle. Patterns and problems in echinoderm evolution.
Marcus. Phenotypic variation in echinoderms.
Craig. Genomic variability in echinoderms
Shick. Respiratory gas exchange in echinoderms

Valentincic. Innate and learned responses to external stimuli in asteroids.
Campbell. Form and function in pedicellariae.
Ebert. Recruitment in echinoderms.

Jangoux, M., J.M. Lawrence (eds.). 1987. Echinoderm Studies 2. A.A. Balkema, Rotterdam.
Roux. Evolutionary ecology and biogeography of Recent stalked crinoids as a model for the fossil record.
Emlet, R.B., L.R. McEdward, R.R. Strathmann. Echinoderm larval ecology viewed from the egg.
Harrold, C., J.S. Pearse. The ecological role of echinoderms in kelp forests.
Stickle, W.B., W.J. Diehl. Effects of salinity on echinoderms.

Jangoux, M., J.M. Lawrence (eds.) (in press). Echinoderm Studies 3. A.A. Balkema, Rotterdam.
Burke. Metamorphosis in echinoderms
Birkeland. Ecological role of echinoderms in coral reefs.
Dubois & Chen. Calcification in echinoderms.
Blake. Evolution and functional morphology of asteroids.
Clark. Catalogue of Recent Asterozoa, Part I.
Madsen. Biography of Lutken.
Pawson. Biography of T. Lyman.
Rowe. Biography of Sladen
Hansen. Biography of Theel

Subscriptions to the Echinoderm Studies series are available at reduced prices.

Jangoux, M. (ed.). 1980. Echinoderms: Present and Past. A.A. Balkema, Rotterdam. (Proceedings of the European Colloquim on Echinoderms, 1979)

Lawrence, J.M. (ed.). 1982. Echinoderms: Proceedings of the International Conference, Tampa Bay. A.A. Balkema, Rotterdam

Keegan, B.F., B.D.S. O'Connor. 1985. Echinodermata. A.A. Balkema, Rotterdam. (Proceedings of the Fifth International Echinoderm Conference, Galway)

Jangoux, M., J.M. Lawrence (eds.). 1982. Echinoderm Nutrition. A.A. Balkema, Rotterdam.

Millott, N. (ed.) 1968. Echinoderm biology. Academic Press.

Broadhead, T.W., J.A. Waters (eds.). 1980. Echinoderms: notes for a short course. Univ. Tenn Stud. Zool.

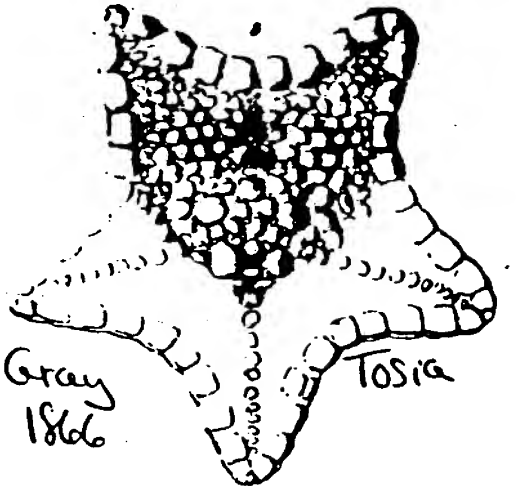
Clark, A.M., J. Courtman-Stock. 1976. Echinoderms of southern Africa. Brit. Mus. (Nat. Hist.).

Paul, C.R.C., A.B. Smith (eds.) 1988. Echinoderm phylogeny and evolutionary biology. Clarendon Press, Oxford. (Oxford University Press, Walton Street, Oxford OX2 6DP, England)

Jefferies, R.P.S. How to characterize the Echinodermata--some implications of the sister-group relationship between echinoderms and chordates.
Holland, N.D. The meaning of developmental asymmetry for echinoderm evolution: a new interpretation.
Raff, R.A., K.G. Field, M.T. Ghiselin, D.J. Lane, G.J. Osen, N.R. Pace, A. L. Parks, B.A. Parr, E.C. Raff. Molecular analysis of distant phylogenetic relationships in echinoderms.
Matsumura, T., M. Shigei. Collagen biochemistry and the phylogeny of echinoderms.
Smiley, S. The phylogenetic relationshipsof holothurians: a cladistic analysis of the extant echinoderm classes.
Smith, A.B. Fossil evidence for the relationships ofextant echinoderm classes and their times of divergence.
Britten, R.J. DNA evolution and echinoderm evolution.
Marshall, C.R. DNA-DNA hybridization, the fossil record, phylogenetic reconstruction, and the evolution of the clypeasteroid echioids.
Jacobs, H.T., P. Belfe, B.L. Cohen, A. Farquharson, L. Comito. Phylognetic implications of genome rearrangement and sequence evolution in echinoderm mitochondrial DNA.
Davidson, E.H. What molecular biology tells us about the genomic programme for development.
McNamarra, K.J. Heterochrony and the evolution of echioids.
McKinney, M.L. Roles of allometry and ecology in echinoid evolution.
Dafni, J. A biochemical approach to the ontogeny and phylogeny of echinoids.
McEdward, L.R. Experimental embryology as a tool for studying the evolution of echinoderm life histories.
Paul, C.R.C. The phylogeny of the cystoids.
Waters, J.A. The evolutionary palaeoecology of the Blastoidea.
Donovan, S.K. The early evolution of the Crinoidea.
Sevastopulo, G.D., N.G. Lane. Ontogeny and phylogeny of disparid crinoids.
Broadhead, T.W. The evolution of feeding structures in Palaeozoic crinoids.
Simms, M.J. The phylogeny of post-Palaeozoic crinoids.
McKenzie, J.D. The ultrastructure of tube foot epidermal cells and secretions: their relationship to the duo-glandular hypothesis and the phylogeny of the echinoderm classes.
Emlet, R.B. Crystallographic axes of echinoid genital plates reflect larval forms: some phylogenetic implications.
Wilkie, I.C., R.H. Emson. Mutable collagenous tissue and their significance for echinoderm palaeontology and phylogeny.
David, B. Origins of the deep-sea holasteroid fauna.
Parsley, R.L. Feeding and respiratory strategies in Stylophora.

Stone canal and madreporite
Asterias. Ludwig. 1899

Burke, R.D., P.V. Mladenov, P. Lambert, R.L. Parsley. (eds.). 1988. Echinoderm Biology. A.A. Balkema, Rotterdam. (Proceedings of the Sixth International Echinoderm Conference, Victoria, 1987).



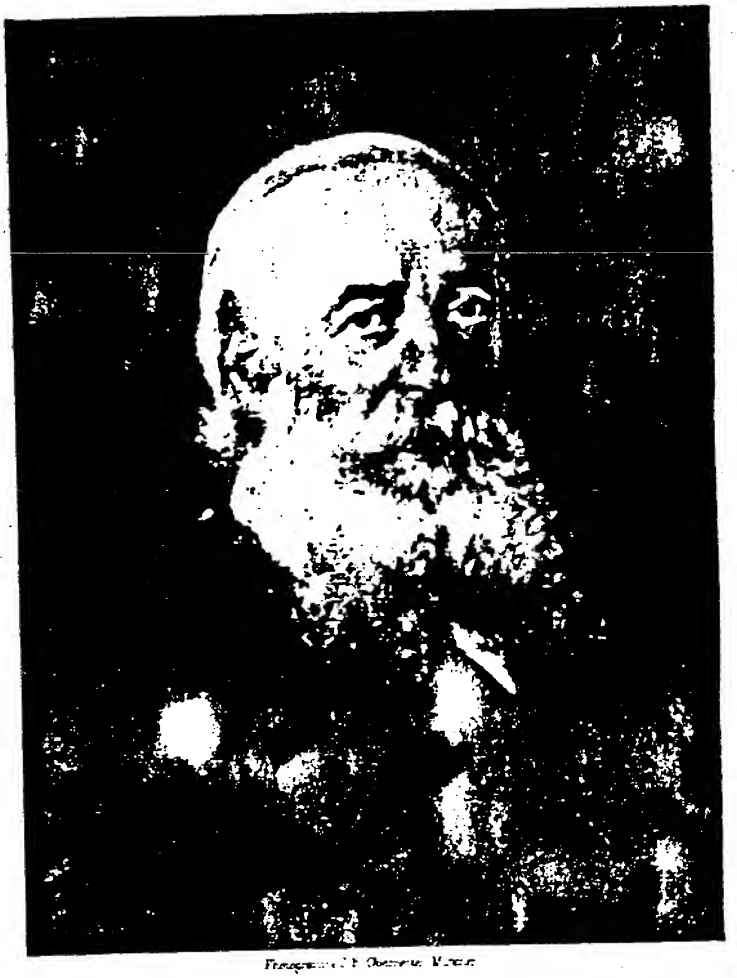
Boudouresque, C. F. (ed.). Colloque international sur Paracentrotus lividus et les oursins comestibles. GIS Posidonie publ., Marseille, Fr. I-XX + 433 pp.

PUBLICATION OF THE
OFFICIAL LISTS AND INDEXES OF NAMES AND WORKS IN ZOOLOGY

The 1987 edition of the "Official Lists and Indexes..." has been published by the International Trust for Zoological Nomenclature. This publication records for the first time in a single volume all the animal names and the titles of works on which the International Commission has ruled since it was set up in 1895. The volume comprises 366 pages and includes 9,900 entries. References are arranged alphabetically in four sections: family-group names, generic names, and titles of works.

This work includes over 100 names of Echinodermata, including those of 10 family-groups, 49 genera and 66 species.

In North America, copies may be ordered from the American Association for Zoological Nomenclature (AAZN, c/o NHB Stop 163, Smithsonian Institution, Washington, D.C. 20560). the cost is $110.00 ($100.00 to AAZN members).



Prof. Dr L. Lemper.

PUBLICATIONS of the OCEANOGRAPHIC MUSEUM of MONACO

CONCERNING ECHINODERMS

Résultats des campagnes scientifiques accomplies sur son yacht par Albert Ier, Prince Souverain de Monaco

N° 6 : Contribution à l'étude des Holothuries de l'Atlantique Nord / Emil von MARENZELLER. - 22 p., 2 pl. (1893)..... 30,00 F.

N° 11 : Contribution à l'étude des Stellérides de l'Atlantique Nord (Golfe de Gascogne, Açores, Terre-Neuve) / Edmond PERRIER. - 59 p., 4 pl. (1896)..... 80,00 F.

N° 12 : Echinides et Ophiures provenant des campagnes du yacht l'Hirondelle (Golfe de Gascogne, Açores, Terre-Neuve) / René KOEHLER. - 78 p., 10 pl. (1898)..... 100,00 F.

N° 21 : Holothuries provenant des campagnes de la Princesse-Alice (1892-1897) / Edgard HEROUARD. - 61 p., 8 pl. (1902)..... 80,00 F.

N° 34 : Echinodermes provenant des campagnes du yacht Princesse-Alice (Astéries, Ophiures, Echinides et Crinoïdes) / René KOEHLER. - 317 p., 32 pl. (1909)..... 400,00 F.

N° 66 : Holothuries provenant des campagnes des yachts Princesse-Alice et Hirondelle II (1898-1915) / Edgard HEROUARD. - 163 p., 10 pl. (1923)..... 180,00 F.

Bulletin de l'Institut océanographique

N° 60 : Sur Pelagothuria Bouvieri (Holothurie pélagique nouvelle) recueillie pendant la campagne du yacht Princesse-Alice en 1905 / Edgard HEROUARD. - 6 p., 2 fig. (1906)..... 3,00 F.
(out of print, photocopies only)

N° 64 : Description d'une nouvelle larve d'Astérie appartenant très vraisemblablement à une forme abyssale : Stellosphaera mirabilis / René KOEHLER et Clément VAYEY. - 10 p., 5 fig. (1906)..... 5,00 F.
(out of print, photocopies only)

N° 99 : Note préliminaire sur quelques Astéries et Ophiures provenant des campagnes de la Princesse-Alice / René KOEHLER. - 47 p. (1907)..... 24,00 F.
(out of print, photocopies only)

N° 118 : Description d'un nouveau genre de Prosobranches parasite sur certains Echinides (Pelseneeria nov. gen.) / René KOEHLER et Clément VAYEY. - 16 p., 10 fig. (1908)..... 8,00 F.
(out of print, photocopies only)

N° 239 : Holothuries nouvelles des campagnes du yacht Princesse-Alice, note préliminaire / Edgard HEROUARD. - 9 p., 7 fig. (1912)..... 2,50 F.

N° 245 : L'effet de l'inanition sur la larve de l'Oursin / Johan RUNNSTRÖM. - 20 p., 7 fig. (1912)..... 10,00 F.
(out of print, photocopies only)

N° 294 : Une étude philosophique de la relation entre les crinoïdes actuels et la température de leur habitat / Austin H. CLARK. - 11 p. (1914)..... 6,00 F.
(out of print, photocopies only)

N° 301 : L'hémiplexie et la phylogénie des Echinodermes / Edgard HEROUARD. - 13 p., 2 fig. (1915)..... 5,00 F.

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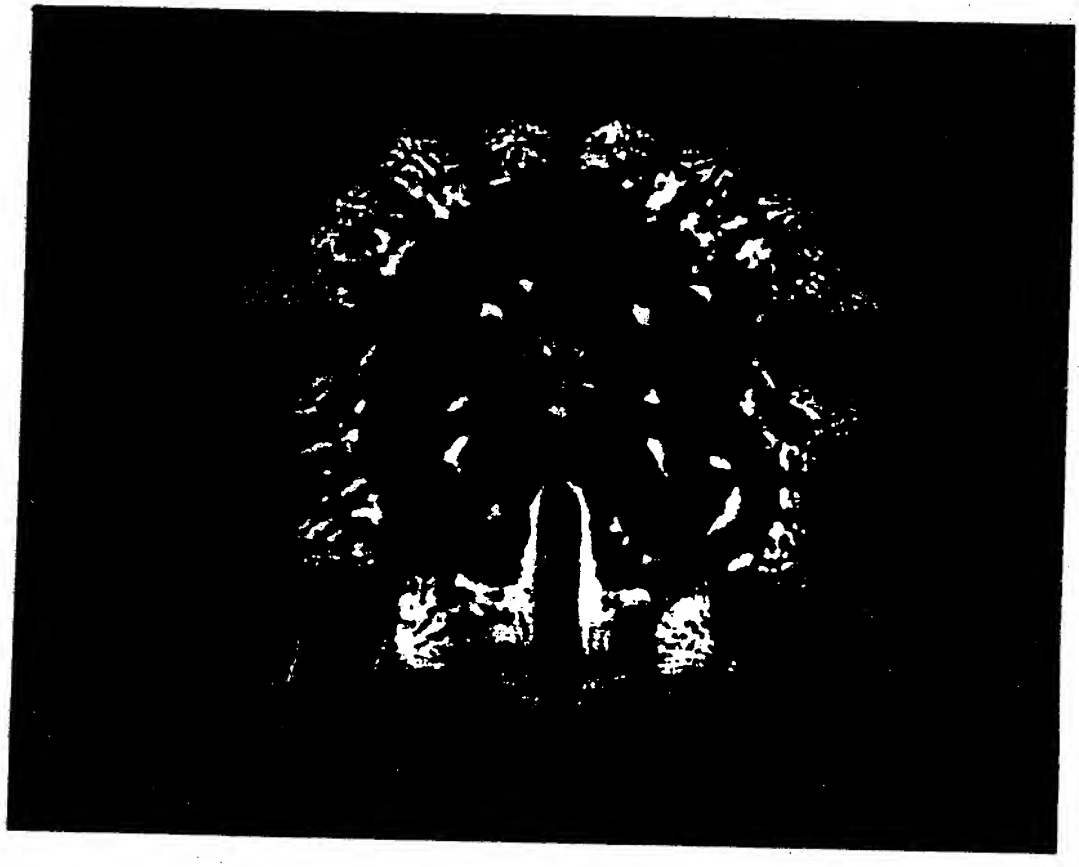

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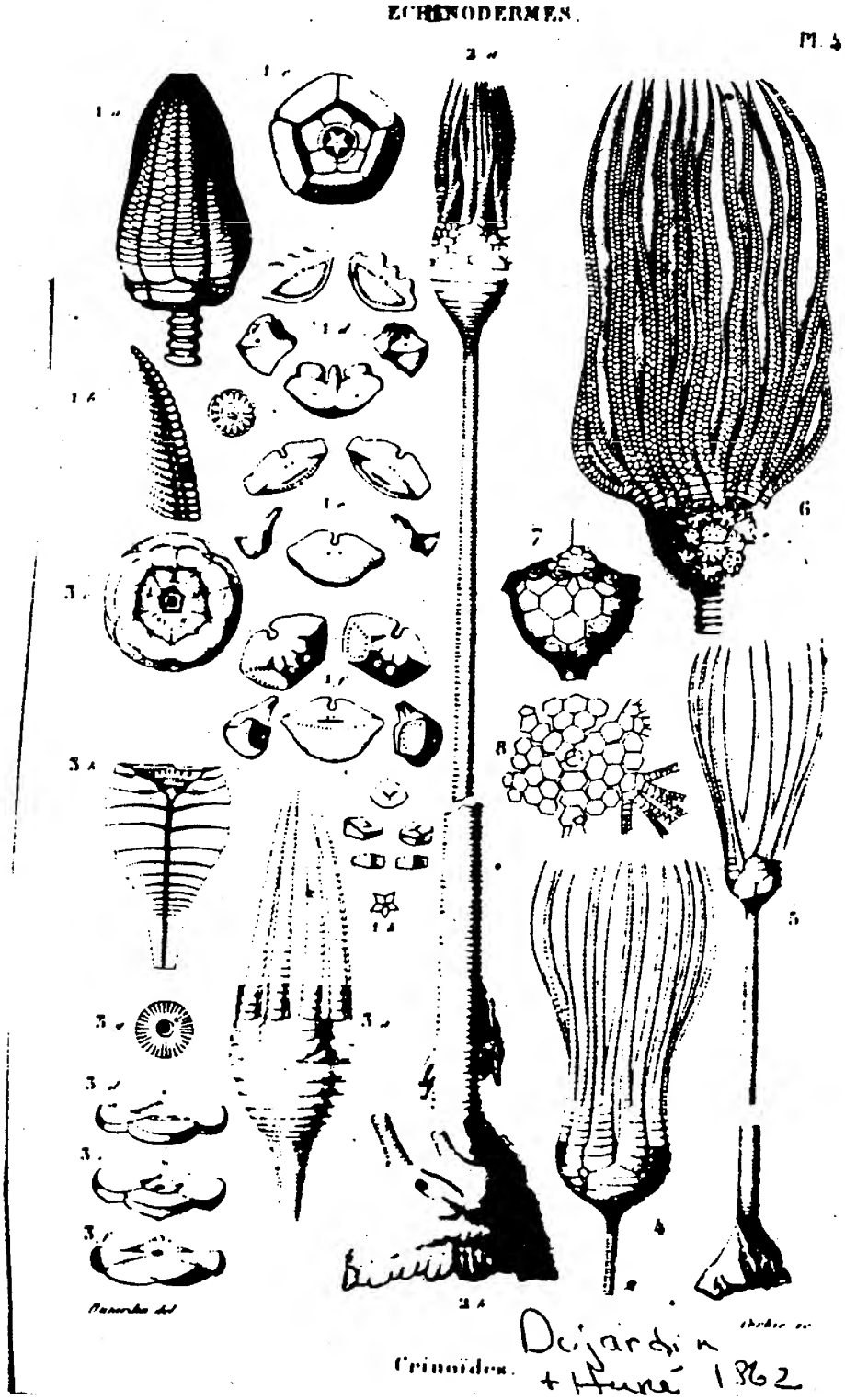

Translation available:
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Papers presented at the annual meeting of the Geological Society of America, Phoenix, 1987. (communicated by W. I. Ausich)

Cox, R.S., W.M. Brown. Seeing the forst for the trees: mitochondrial gene order and echinoderm phylogeny.
Fisher, D.C., R.S. Cox. Phylogenetic applications of echinoderm skeletal crystallography.
Jones, D.S., R.W. Portell, G.A. Bishop. Occurrence and biogeographic significance of the multi-rayed starfish (Heliaster) with commensal crabs from the Pliocene of southwest Florida.
Meyer, D.L., W.I. Ausich, J.L. Thies. Comparative taphonomy of echinoderms in carbonate buildups: Fort Payne Formation (Lower Mississippian) of south-central Kentucky.
Riddle, S.W. The helically twisted platycrinitid column: functions and implications for paleoecology.
Schneider, J.A. Paleobiological implications of the frequency of sublithal predation in relation to life habit of crinoids.

Papers presented at the Northeastern section of the Geological Society of America, Portland, 1988 (communicated by W. Ausich)

Meyer, D.L. Population paleoecology of edrioasteroid echinoderms from the Upper Ordovician of the Cincinnati Arch region.

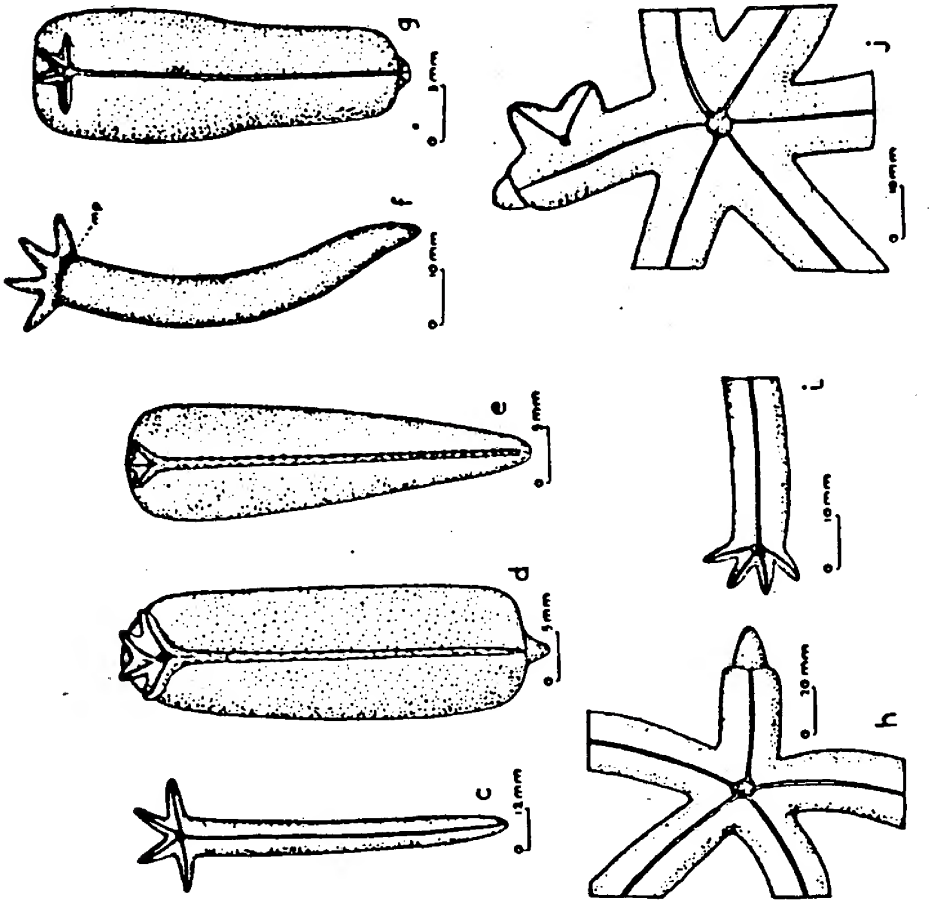


FIGURE 1.—*Linckia multiforis* (*a, b, c, g, j*); *Linckia diplax* (*d-f, h, i*): *a*, autotomy nearing completion, the areolar tissue stretching as the ray is separated; *b*, "germinal ridge," *gr*, formed about ambulacral groove at injured end of a ray; *c*, a "comet" taken from the reef; *d, e*, basal and distal segments, respectively, of the same ray showing gradation of regeneration; *f*, a severed ray with madreporite, *mp*, after 10 months' regeneration; *g*, segment of an arm with rays developing at both ends; *h, i*, regeneration of an artificially severed ray after 10 months; *j*, six-rayed specimen with a branched arm.

Edwards 1935

Papers presented at the North-centrl section ofthe Geological Society of America, Akron. 1988. (communicated by W. Ausich)

Ausich, W.I., D.L. Meyer. Fort Payne Formation crinoid buildups: faunal composition, ecologic zonation, comparisons (Lower Mississippian, south-central Kentucky).
Blake, D.B., T.E. Guensburg. Two new multiarmed Mississippian asteroids (Echinodermata) from the UpperMississipi Valley.
Holterhoff, P.F. Morphologies and facies associations of crinoids from the Lower Stanton Formation (Late Pennsylvanian, Lansing Group) of the mid-continental United States.
Kammer, T.w., W.I. Ausich. Paleoecologic analysis ofEarly Mississippian crinoids: comparisonofabundance, species, and generic data sets.
Lane, N.G., G.D. Sevastopulo. Stratigraphic distribution of Mississippian-Lower Carboniferous crinoids from North America and Europe.
Wulff, J.I., S.W. Riddle, W.I. Ausich. Colulmnal insertion and column growth in a Mississippian flexible crinoid.

Papers presented at the Southcentral section of the Geological Society of America, Lawrence. 1988 (communicated by W. Ausich)

Holterhoff, P.F. Distribution of crinoid assemblages in the lower Stanton Formation (Late Pennsylvanian, Lansing Grou) in the mid-continental United States.
Pabian, R.K., P.F. Holterhoff. Pennsylvanian crinoids from the quarries at Hamilton, Kansas.

Annual Meeting of the Florida Academy of Sciences 1986

Lawrence, J.M., P.F. Dehn, S.A. Watts. Annual cycles of the gonads and pyloric ceeca of Luidia clathrata (Echinodermata: Asteroidea) 14
Turner, R.L. D.A. Bruzek. S.E. Lochmann, C.M. Norlund. Distribution of sea urchins, sand dollars, and heart urchins off the Atlantic coast of Florida. 16.

Annual Meeting of the Florida Academy of Sciences 1988

Edwards, K., Kinetic analysis of cadmium ion inhibition of cytoplasmic malate dehydrogenase from the starfish Luidia clathrata. 20
Femmer, R.H., R.L. Turner. Ophiuroids and hemichordates: an alleolochemic role for 2, 4-dibromophenol. 23
Curley, J.L., R.L. Turner. Frequency and distribution of disc regeneration in an ophiuroid. 23.
Montague, J., K. Ambrisco, D. Vassil. Laboratory feeding rates in the green sea urchin Lytechinus variegatus. 24.
Montague, J., W. Collazo. Behavioral responses to tagging the in the green sea urchin Lytechinus variegatus. 24.

АКАДЕМИЯ НАУК СССР

Научный совет по проблеме "Пути и закономерности исторического развития животных и растительных организмов"

АКАДЕМИЯ НАУК ЭСТОНСКОЙ ССР

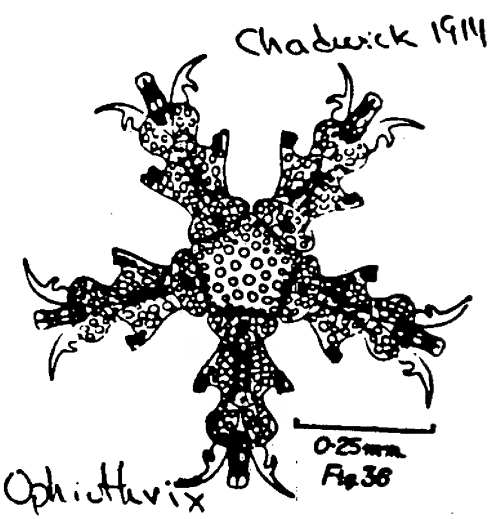
Институт геологии

ПРОБЛЕМЫ ФИЛОГЕНИИ И СИСТЕМАТИКИ ИГЛОКОЖИХ

Тезисы докладов VI Всесоюзного симпозиума по иглокожим

УДК 563.9 + 593.9

Сборник содержит тезисы докладов, представленные на VI Всесоюзный симпозиум по иглокожим, которые посвящены проблемам филогении, систематики, морфологии и другим аспектам изучения ископаемых и современных иглокожих. В них отражены основные направления исследований иглокожих в СССР.



Peristome.
Astropecten.
Ludwig. 1899.

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Suppl. H.S. 1987

(proceedings: Ve SEMINAIRE INTERNATIONAL SUR LES ECHINODERMES FOSSILES ET ACTUELS held at Nantes, 1986, Presidente: C. Cuenca).

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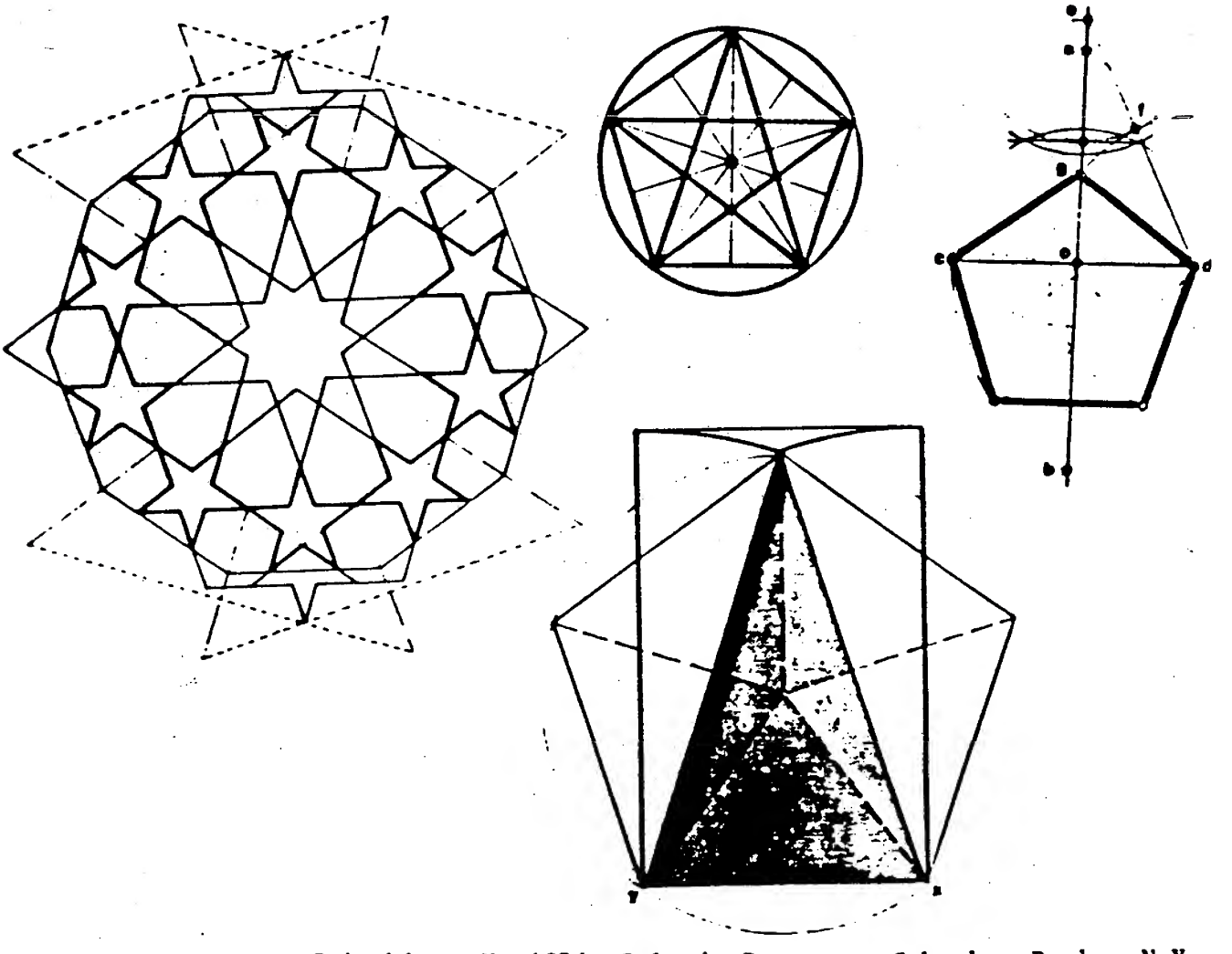

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Birtles, R.A., P.W. Arnold. Distribution of trophic groups of epifauna echinoderms and molluscs in the soft sediment areas of the central Great Barrier Reef shelf.

Eakin, C.m. Avoidance of damselfish lawns by the sea urchin Diadema mexicanum at Uva Island, Panama.

Conand, C. Comparison betyween estimations of growth and mortality of two stichopodid holothurians: Thelenota ananas and Stichopus chloronotus (Echinodermata: Holothuroidea)

Fouda, M.M., A.M. Hellal. Aspects of the reproduction biology of the sea urchin Tripneustes gratilla (L.) from the north western Red Sea.

Lessios, H.A. Effects of Caribbean echinoids oncoral recruitment and survivorship.

Trinidad-Roa, M.J., J.N. Pasamonte. A strategy for themanagement of the sea urchin, Tripneustes gratilla in Bolinao, Panagasinan, Philippines.

Richer de Forges, B., J.L. Menou. The echinodermes of the soft bottoms of the south-western lagoon of New Caledonia.

Walker, G. The distribution and abundance of four types of sea urchin Echinometra mathaei (Blainville) on Okinawan Reef.

Bell, R., B. Kettle, R. Stump. Artificial barriers on coral reefs: a frontline strategy for crown-of-thorns management.

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Buck, R.G., M.J. Riddle, R.H. Bradbury. The sedimentary record of Acanthaster: a modelling approach.

Chalker, B.E., W.C. Dunlap, A.T. Banaszak, P.J. Moran. UV-abosrbing pigments in Acanthaster planci: photoadaptation during the life history of reef invertebrates.

De Silva, M.W.R.N. Status of Acanthaster planci infestations and attempts to control them in peninsular Malaysia.

Doherty, P.J., J. Davidson. Recruitment of juvenile Acanthaster planci in the central Great Barrier Reef.

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Johnson, D.B., D.K. Bess, B.A. Miller-Smith, P.J. Moran, C.N. Mundy, P.J. Speare. Outbreaks of crown-of-thorns starfish (Acanthaster planci) on the Great Barrier Reef: results of surveys 1986-1988.

Keesing, J.K. Diel behavioural patterns in Acanthaster: is the crown-of-thorns starfish a diurnal ornocturnal feeder?

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Rahman, R.A. The crown-of-thorns, Acanthaster planci (L.), outbreaks on coral reefs of the east coast islands of peninsular Malaysia.

Sutton, D.C., L. Trott, J.L. Reichelt, J.S. Lucas. Assessment of bacterial pathogenesiss in crowno-of-thorns starfish, Acanthaster planci (L.).

Walbran, P.D., R.A. Henderson. Modern andancient perspectives on the crown-of-thorns starfish (Acanthaster planci L.) in the Great Barrier Reef Province, Australia, assessed from the sediment record of John Brewer, Green Island and Heron Island reefs..

Yokochii, H., S. Ueno, M. Ogura, A. Nagai, T. Habe. Recruitment, diet and growth of juvenile Acanthaster planci on reefs in a recovery phase.

Zann, L.P., P.J. Moran. A coordinated research program on the Acanthaster phenomenon in Austrlia.

Zann, L., K. Hansen. An evaluation

Papers presented at the annual meeting of the American Society of Zoologists, Nashville. Abstracts printed in the American Zoologist, 26(4), 1986.

Watts, S.A., J.M. Lawrence. Seasonal changes in the activities of metabolic enzymes in the pyloric caeca of Luidia clathrata (Echinodermata). 4A
Manahan, D.T. New fluxes of amino acids to and from seawater following fertilization ofsea urchin eggs. 5A
Bay-Schmith, E. Sea urchin gametogenesis under fixed phtoperiod, effect of gonoduct ablation. 10A.
Wessel, G.M., W.J. Lennarz, W.H. Klein. Gastrulation-related events studied with low calcium-induced exogastrulae in sea urchin embryos. 11A
Cameron, J.L. Observations on the ecology of the juvenile life stage of the California sea cucumber Parastichopus californicus (Stimpson). 41A
Dobson, W.E. Early disc regeneration after autotomy in the brittlestar Microphiopholos gracillime. 42A
Clements, L.A.J. Amino acid uptake by a regenerating brittlestar. 42A
Aronson, R.B. Predation on ophiuroids through geologic time.
Fields, K.G., M.T. Ghiselin, D.J. Lane, G.J. Osen, N.R. Pace, E.C. Raff, R.A. Reff. Phylogeny of the Metazoa based on 18S ribosomal RNA sequences. 92A.
McClintock. J.B. Toxicity in polar sponges: a reappraisal of thelatitudinal hypothesis. 127A (asteroids)
Miller, R.L. Starfish sperm bind sperm attractant only to their tails. 135A.
Cavey, M.J., H. Jang. Neuronal nets in the epidermis and the connective tissue of a holothurian tube foot. 130A.

Papers presented at the annual meeting of the American Society of Zoologists, New Orleans. Abstracts published in the American Zoologist 1987, vol. 27(4)

Lawrence, J.M., M.B. Regis, G. Gras, P. Delmas. Digestions of a prepared food by Paracentrotus lividus (Echinodermata: Echinoidea). 14A
Donachy, J.E. Effect of salinity stress and arm regeneration on Na, K-ATPase, Ca2+-ATPase and alkaline phosphatase in the starfish Asterias forbesi. 51A
Grygier, M.J. Taxonomy, host distribution, and SEM-based morphology of Myzostoma (Myzostomida). (crinoid) 59A
McClintock, J.B., J.S. Pearse. Reproductive biology of the common Antarctic crinoid Promachocrinus kerguelensis. 82A.
Baron, C.F. Is growth in sea urchins mediated by mechanical forces? 150A.
Crawford, B.J. Ultrastructure of ectodermal and endodermal basal laminae and extracellular matrix (ECM) of Pisaster ochraceus. 101A.
Grober, M.S. Brittle-star bioluminescence functions as an aposematic signal to deter crustacean predators.

Paper presented at the XV Congresso Brasileiro de Zoologia, Curitaba, Parana, 1988.

Ventura, C.R.R., F.C. Fernandes. Distribution and predatory activity of Asteroidea (Echinodermata) in subtidal soft-bottom at Cabo Frio, RJ. (Astropecten species)

Papers presented at the annual meeting of the American Society of Zoologists, San Francisco. Abstracts published in the American Zoologist, 28(4), 1988.

McAlarly, F.A. Population genetics of an autotomous seastar. 7A.
Kwast, K.E., D.W. Foltz, W.B. Stickle. Genetics and systematics of the six rayed sea star Leptasterias hexactis. 7A
Metz, E.C., S.R. Palumbi. Gamete compatibility, mitochondrial DA, and speciation in tropical sea urchins. 7A.
Kessing, B.D., S.R. Palulmbi. The evolution of sea urchins in the genus Strongylocentrotus. 8A.
Lambert, P. Identification of some problematic species of Cucumaria (Echinodermata: Holothuroidea).9A.
Ghiselin, M.T., J.M. Lowenstein. Phylogeny of echinoderms: comparison of trees based on radioimmunoassay and 18S ribosomal RNA sequence data. 9A.
Stricker, S.A., G. Schatten. Changes in nuclear structure and composition during GVBD in starfish oocytes. 29A.
Wessel, G.M. Basal laminar components are derived from stores within the egg and from new sysnthesis during development in the sea urchin embryo. 29A.
Hewitt, C.L. Tropical grazer interactions on a rocky intertidal shore. 68A.
Pearce, C.M., R.E. Scheibling. Larval settlement in the green sea urchin, Strongylocentrotus droebacheinsis. 71A.
Garcia-Arraras, J., I. Torres-Avillan, S. Ortiz-Miranda. Cells expressing cholecystokinin-like immunoreactivity (CCK-LI) are present in the intestine of the sea cucumber Holothuria mexicana. 84A.
Rumrill, S.S. Temporal and spatial variability in the intensity of recruitment of a sea star: frequent recruitment and de ise. 123A.
Colwell, S.J., D.T. Manahan. A comparison of the transport rates by marine invertebrate larvae of monosaccharides and alanine from seawater. 131A. (echinoid)
Davis, G..E. Abalone decline may signal shift in California Channel Islands coastal ecosystem structure. 163A. (asteroid, echinoid)
Hopper, D.R., R.H. Richmond. Reproductive and larval biology of two tropica holothurians. 139A.
McEdward, L.R. The influence of reduced egg size on development rate and mortality of echinoid larvae. 139A.
Levitan, D.R. Factors influencing fertilization success and fecundity in the sea urchin Diadema antillarum Philippi. 139A.
Cameron, J.L., C.M. Young. "Larval ecology" in the deep sea: innovations and renovations. 140A. (echinoderms)
McClintock, J.B., J.S. Pearse. Reproductive biology of the Antarctic brooding sea urchins Abatus shackletoni and Abatus nimrodi. 151A.
Barrett, D. Swimming behavior of echinoid larlvae. 152A.
Hart, M.W. The scaling of clearance rate and ciliary band length in echinoplutei. 166A.
Gilmour, T.H.J. Feeding behaviour of holothurian larvae. 167A.
Bosch, I., R.B. Rivkin. Feeding denamics by planktotrophic asteroid larvae in oligotrophic environments. 167A.
Eckelbarger, K.J., C.M. Young, J.L. Cameron. Unusual gonads and bizarre gametes from deep-sea echinoderms. 169A.
Miller, R.L. Evidence for a putative spawning stimulating phermone in forcipulate starfishes. 170A.
Klinger, T.S., J.M. Lawrence. Digestion and absorption of prepared foods containing plant or animal material by Lytechinus variegatus Lamarck (Echinodermata: Echinoidea). 193A.

MEETING OF THE SOUTHEASTERN SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA
(communicated by W.I. Ausich)

Norfolk, VA, 25-27 March, 1987

Lewis, R.D.. Post-mortem decomposition of ophiuroids from the Mississippi Sound.

MEETING OF THE NORTH-CENTRAL SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA
(communicated by W.I. Ausich)

St. Paul, MN, 30 April-1 May, 1987

Brower, J.C. Growth of the food-gathering system incalceocrinid crinoids.
Brower, J.C. Middle Ordovician crinoid assemblages from the Twin Cities area of Minnesota.
Frest, T.J., D.R. Kolata, & J.C. Brower. Biostratigraphy and biogeography of the Middle and Upper Ordovician echinoderms of the upper Mississippi Valley region.

SECOND INTERNATIONAL SYMPOSIUM ON INDO-PACIFIC MARINE BIOLOGY

Symposium on recent findings in Acanthaster biology and implications for reef management.

Guam, 1986.

Birkeland, C. Partial correlations of island size, human poopulation size, and Acanthaster planci abundance.
Kettle, B.T. & J.S. Lucas. Size-related morpholoOgical and physiological phenomena in Acanthaster planci (L.)
Moran, P.J., R.H. Bradbury, &R.E. Reichelt.Changes in the distribution and abundance of crown-of-thorns starfish (Acantaster planci) and corals on John Brewer Reef: diary of an outbreak cycle.
Yamaguchi, M. Occurrences and persistances of Acanthaster planci pseudopopulations in relation to oceanographic conditions along the Pacific coast of Japan.
Kenchington, R. Acantaster planci and the management of the Great Barrier Reef.
Birkeland, C. Two roles of current patterns in determining thedistribution and abundance of Acantaster planci.
Moran, P.J. Ecological research on the crown-of-thorns starfish: development of a new program in Australia.
Zann, L., J. Brodie, C. Berryman, & M. Nagasima. Recruitment, ecology, growth, and behavior of juvenile Acanthaster planci.
Yokochi, H., K. Nomura. On a method of rearing for the pelagic larvae of Acanthaster planci.
Olson, R.R. Born to starvbe, or born to sink? Two models of Acanthaster planci larval recruitment.
Quinn, N.J. & B.L. Kojis. Distribution and abundance of Acanthaster planci in Papua New Guinea.
Chansang, H., P. Boonyanate, N. Pongsiwam, M. Charuchinda & G. Wungboonkong. Infesttation of Acanthaster planci in theAndaman Sea.

NORTH AMERICAN PALEONTOLOGICAL CONVENTION BOULDER, COLORADO. AUGUST 12-15, 1986 (communicated by W.I. Ausich)

SYMPOSIUM ON ECHINODERM PALEOBIOLOGY
Organized by D.L. Meyer and W.I. Ausich

Ausich, W.I. & D.L. Meyer. Facies distribution of crinoids in the Fort Payne Formation of South-Central Kentucky (Mississipian, Echinodermata)
Brett, C.E. Evolution of pelmatozoan attachment strategies: implications for substrate destabilization.
Donovan, S.K. Functional morphology of Myelodactylus and Herpetocrinus from the Silurian.
Kammer, T.W. & W.I. Ausich. Multivariate analysis of Upper Osagean (Mississipppian) crinoids from the east-central United States.
Kellly, S.M. Classification and evolution of class Crinoidea
Maples, C.C. & J.A. Waters. Evolutionary replacement and reorganization in echinoderm communities: an example from the Mississippian (Meramecian/Chesterian) of Alabama.
McIntosh, G.C. Phylogeny of the dicyclic inadunate crinoid Order Cladida.
McIntosh, G.C. & J.D. Eckert. Progenesis and the evolution of heterotomous arms in the cladid inadunate crinoid suborder Dendrocrinina.
McKinney, M.L. Cenozoic echinoid diversity and mass extinction patterns closely tied to temperature.
Paul, C.R.C. & A.B. Smith. Echinoid faunal dynamics and evolution in the Cenomanian (U. Cretaceous) of SW England.
Schumacher, G.A. Storm processes and crinoid preservation.

ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA
(communicated by W.I. Ausich)

San Antonio, TX H, 10-13 November 1986

Blake, D.B. & T.E. Guensburg› Functional and phylogenetic implications of some well preserved Paleozoic sea stars.
Lewis, R.D. Relative rates of skeletal disarticulation in modern ophiuroids and Paleozoic crinoids.
Meyer, D.L. & W.I. Ausich. Blastoids of the Fort Payne Formation (Mississippian, Kentucky).
Waters, J.O. The paleobiology of Carboniferous spiraculate blastoids.

MEETING OF THE NORTHEASTERN SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA
(communicated by W.I. Ausich)

Pittsburg, PA, 4-7 March 1987

Rollins, H.B. & D.K. Brezinski. Reinterpretation of crinoid-platyceratid interaction: new evidence from the Chesterian of southwestern Pennsylvania.

Papers presented at the Annual Meeting of the Western Society of Naturalists, 1986. (Communicated by J.B. McClintock).

Basch, L.V., Interactions between a bioluminescent ophiuroid Ophiopsila californica and several nocturnal benthic predators.
Cameron, R.A., The control of sea urchin metamorphosis.
Carter, J.W., & FOSTER, M.S. Long term variability in a cobble bottom kelp forest.
Hughes, T.P., Coral reef community structure following urchin mass-mortalities.
Pearse, J.S. & McClintock, J.B. Sea otter impact on sea stars: an example of exploitative competition?
Watanabe, J.M. & Harrold, C. Deforestation of a kelp forest by sea urchin grazing within the range of the California sea otter.

C.R.C. Paul (l.)
F.W. Rowe (r.)

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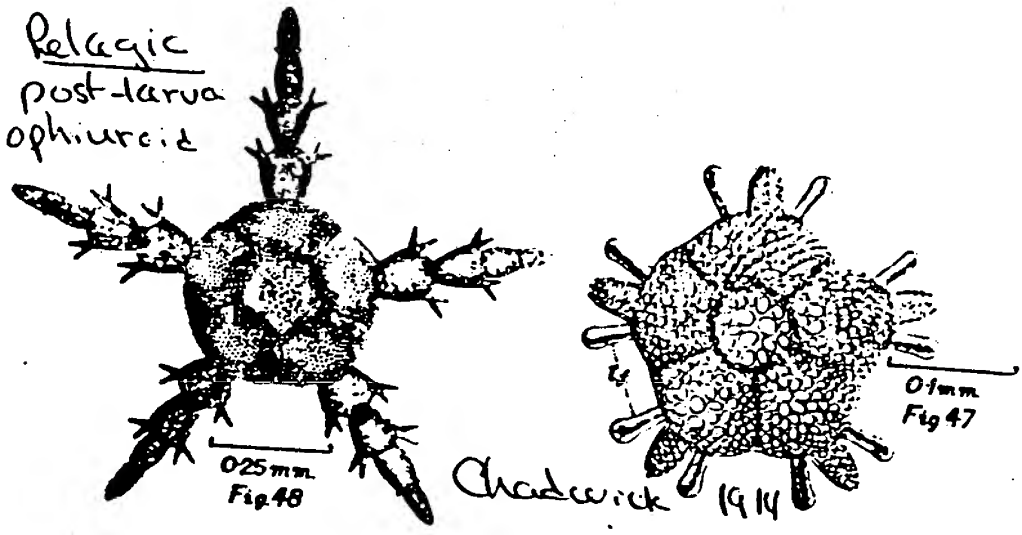

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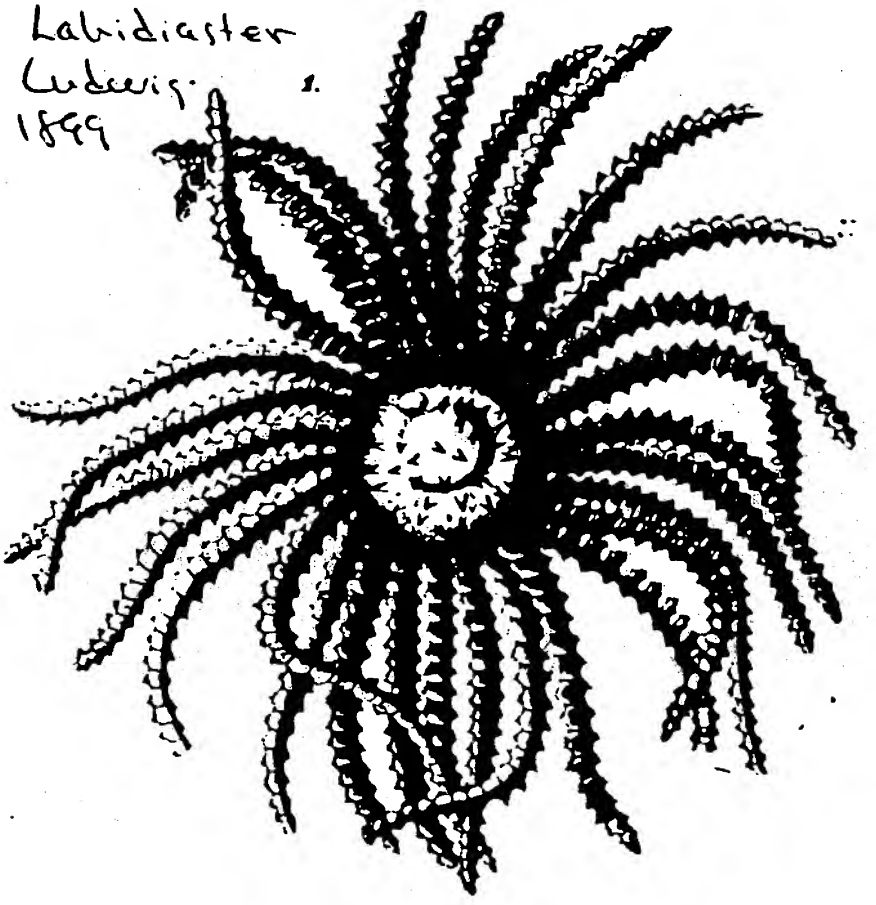

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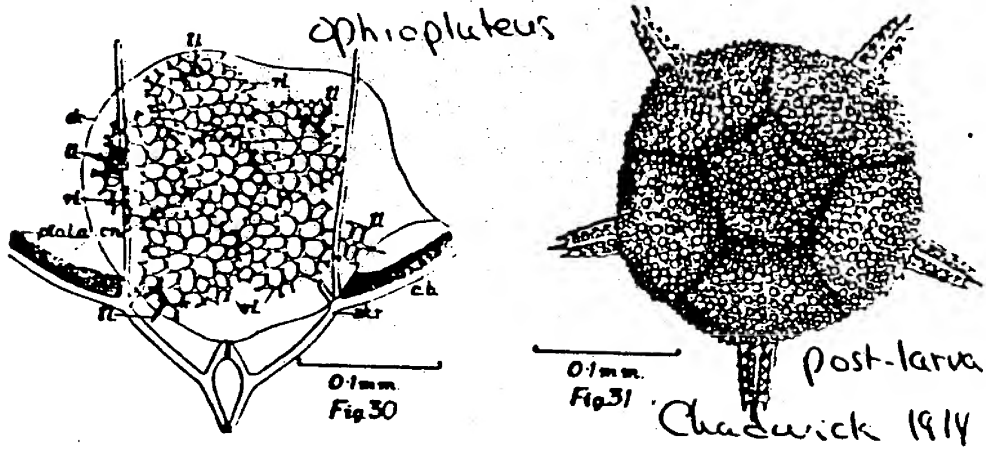

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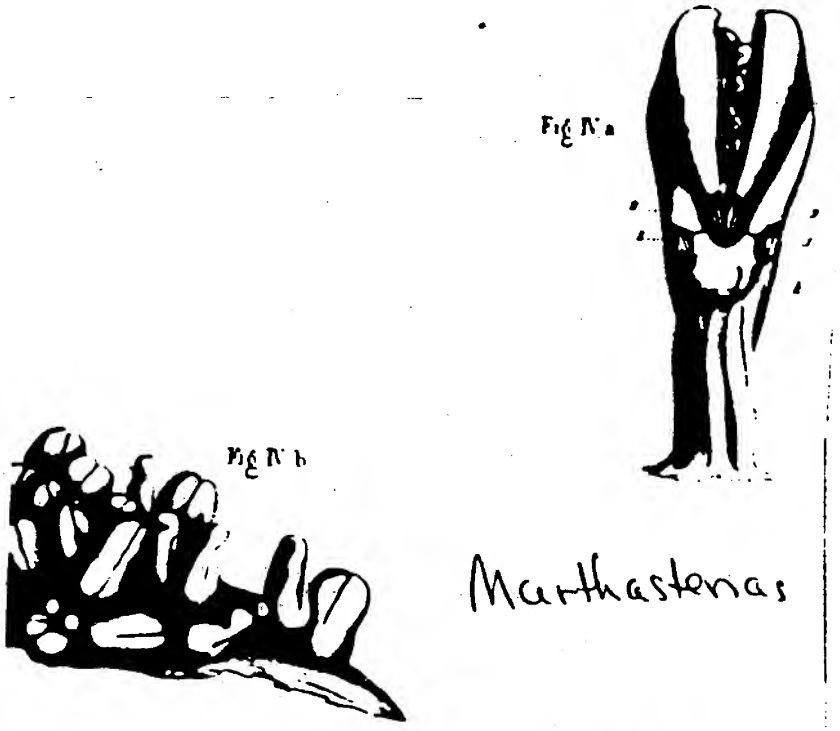

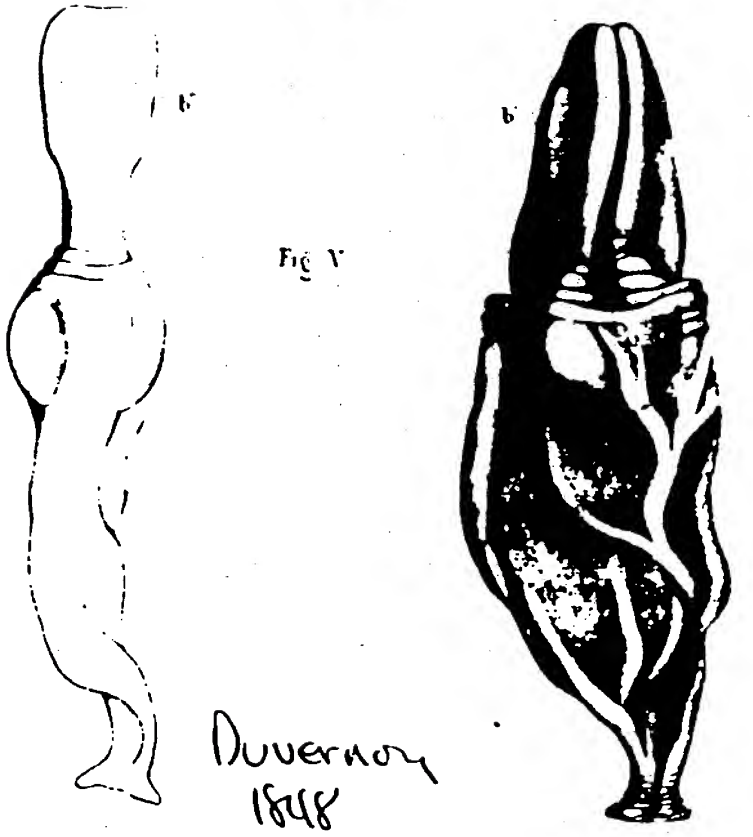

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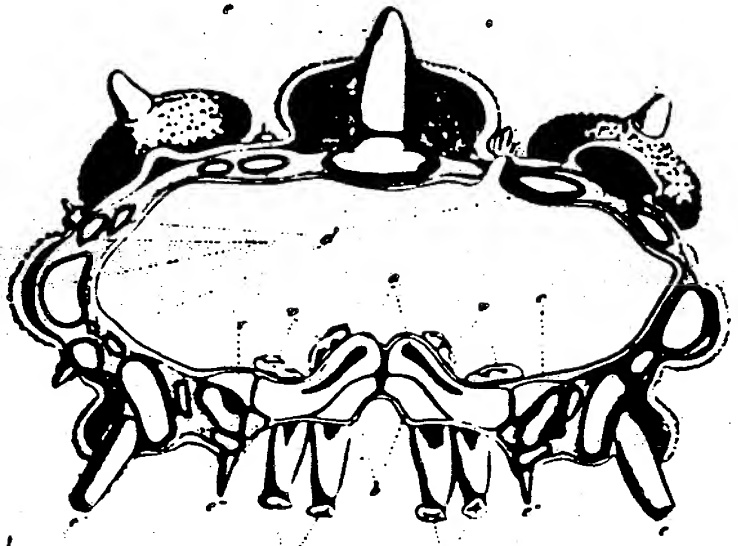
Fig I



Marthasterias

Fig II

Ascerodoa Duvernoy 1848

ACANTHASTER PLANCI: AN ANNOTATED BIBLIOGRAPHY

Third Edition

Peter Moran and Suzie Davies

Australian Institute of Marine Science

Townsville, 1989.

ABOUT THE ACANTHASTER BIBLIOGRAPHY

The third edition of "Acanthaster planci: an annotated bibliography" by Peter Moran and Suzie Davies is now available. It builds on the previous two volumes incorporating a further 70 citations. All referenced articles deal specifically with Acanthaster planci and were published before January 1989.

Each citation is classified generally according to a number of annotations. These have been included to assist the reader in obtaining the information required as easily as possible. Several new annotations have been added to the present edition which take into account articles that deal with new topics (e.g. nitrogen fixation).

The citations for some published works have not been included as they were too general or provided no useful information. In contrast, a number of unpublished works have been cited but only if they were readily obtainable (the source is noted in the text). Articles which have been published but were unavailable to the authors are listed in a separate section at the end of the document.

The bibliography is being loaded into an Oracle database system on the Australian Institute of Marine Science computing system. Work is also proceeding towards producing the bibliography as an Hypercard Stack for use on Macintosh computers. Both forms of the bibliography should be available (at a nominal charge) in the next few months for those who would like copies. Given sufficient demand a dBase version may also be produced.

Hard copy versions of the new edition are available from the Librarian, Australian Institute of Marine Science. PMB 3. Townsville MC. Queensland. Australia. 4810. All other questions relating to the bibliography can be addressed to Peter Moran.

PREFACE

This edition further expands the list of citations given in two previous editions (*Acanthaster planci*: an annotated bibliography, 1986; The *Acanthaster* phenomenon, 1988). Some 70 additional citations are listed bringing the total number of citations in this document to 532. All articles were published before January 1989.

Several new annotations have been included in this edition which take into account articles that deal with new topics (e.g. nitrogen fixation). As in the previous editions some citations are classified by a set of annotations rather than just one.

The citations for some published works have not been included in this document (e.g. notably those of a more popular nature) since the articles were too general or did not give much useful information. In contrast, a number of unpublished works have been included but only if they were readily obtainable (this has been noted in the text).

Several of the references included had no stated authorship. These references have been listed in alphabetical sequence by the first word of the item's title or by institution (e.g. Great Barrier Reef Marine Park Authority).

Articles which have been published but were unavailable to the authors are listed in a separate section at the end of this document.

ACANTHASTERIDÆ.

Acanthaster planci.

Asterias planci Linné. 1758. Syst. Nat. ed. x, p. 823.
Acanthaster echinites Döderlein. 1896. Jena Denksch., *8*, p. 320, pl. xxi, figs. 2–7.
Acanthaster planci Verrill. 1914. Shallow-water Starf. N. Pac. coast, p. 364.

It was quite a surprise to find this extraordinary sea-star at Mer. Only 3 specimens were seen, the largest 400 mm. across. One had only 14 rays, but each of the others had 16. The color in life was bluish-gray with the spines reddish at tip; the change from gray to red is not abrupt but gradual, apparently due to increasing amounts of rusty-red pigment in the skin. In some specimens only the tips of the spines are red, but in others that color extends downward towards or even to the base; if it spread further in the dorsal skin, we should have red individuals, such as those Döderlein records from the Riu-Kiu Islands. The spines of the lower surface are dull reddish-purple and the feet are white or pale yellowish. The disk and the sides and upper surface of arms basally are covered by the dull reddish-purple or brownish papulæ. The entire coloration harmonizes so well with the general coloring of the reef that, in spite of its large size and remarkable spines, this sea-star is very inconspicuous and I doubt not is often overlooked. Those found at Mer were on the surface of the reef and not under rocks or coral slabs. Study of the 31 specimens in the Museum of Comparative Zoölogy from various localities extending from Zanzibar and the Arabian Gulf on the west to the Society and Hawaiian Islands on the east (including Warrior Reef, Torres Strait, as well as Mer) has not enabled me to recognize more than a single species of *Acanthaster*,[1] but I have not seen specimens from Mauritius. Döderlein, however (1896), had six Mauritius specimens, and after comparing with East Indian material, only recognized 1 species. De Loriol's account and figures of the Mauritius form (1885, Mem. Soc. Phys. Hist. Nat. Genève, *29*, No. 4, p. 6, pl. xii) are very important; his colored figure, however, is probably based on a dry specimen.

[1] I have never seen specimens from the western coast of America, where a second species (*ellisii*) occurs, nor would I seem to question the validity of *A. brevispinus* Fisher.

H.L. Clark. 1921. The echinoderm fauna of Torres Strait

KEY TO ANNOTATIONS

The following classifications have been used as a means to best describe each paper in this bibliography and are given in square brackets at the end of the citation. It should be noted that more than one annotation has been used to describe papers which cover several topics.

1. Popular article

2. Review:
   (a) Extensive (b) General (c) Specific

3. Distribution and abundance of *Acanthaster*/pattern of outbreaks

4. *Acanthaster* biology:
   (a) Morphology (b) Toxicity (c) Systematics/genetics
   (d) Reproduction/gametes/larvae (e) Life cycle
   (f) Dispersal/recruitment (g) Growth and development/age
   (h) Feeding/behaviour (i) Movement (j) Physiology (k) Metabolism

5. *Acanthaster* ecology:
   (a) Habitat (b) Population dynamics (c) Symbionts/parasites/diseases
   (d) Predation

6. Biochemical aspects of *Acanthaster*:
   (a) Feeding (b) Toxicity (c) Other

7. Methodology/techniques for study of *Acanthaster*:
   (a) Surveys (b) Controls (c) Laboratory (d) Field

8. *Acanthaster* control programs

9. Cause(s) of *Acanthaster* outbreaks:
   (a) Evidence for or against (b) Hypotheses
   (c) Evidence for previous outbreaks

10. Models of the *Acanthaster* phenomenon:
    (a) General/descriptive (b) Mathematical/theoretical
    (c) Quantitative (d) Qualitative (e) Biological/predation
    (f) Spatial (g) Temporal (h) Control (i) Hydrodynamic

11. Effects of *Acanthaster* outbreaks on coral communities:
    (a) Destruction (b) Recovery (c) Symbionts/commensals
    (d) Biochemical responses

12. Effects of *Acanthaster* outbreaks on other reefal communities:
    (a) Destruction (b) Recovery

13. *Acanthaster* Research:
    (a) Status of. knowledge gained (b) Future

14. Critique

15. Historical/sociological/political

16. Economic effects of *Acanthaster* outbreaks

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B. Echinasterina. *The body discoidal, many-rayed; skeleton netted with numerous elongated doubly mobile articulated spines on mammillary tubercles; dorsal warts numerous.*

XIX. ECHINASTER. Body star-like, granulated, depressed; back rather convex, with a circle of 10–15 conical dorsal warts! Ambulacral spines small, placed in groups with a single continuous row of large slender spines near them. The spines are very long and covered with a granular skin, and have generally a second articulation about one-third the length from the base. *Gray, Syn. Brit. Mus.* 62; *Ann. N. H.* 1840, p. 281. E. sp., *Müll. & Trosch. Ast.* 25.

1. *Echinaster Ellisii.* Dorsal warts 15; rays 11 or 12; spines large, thick. *Gray, Ann. N. H.* 1840, p. 281. Asterias echinus, *Solander and Ellis*, t. 60, 61, 62. Echinaster solaris, *Müll. & Trosch. Ast.* 25. Asterias echinites, *Lam.* Inhab. South America, *H. Cuming, Esq.*

2. *Echinaster solaris.* Rays 21; spines small; dorsal warts 10. *Gray, Ann. N. H.* 1840, p. 281. Asterias solaris, *Naturforscher*, xxviii. t. 1, 2. Inhab. ——.

J.E. Gray. 1866. Synopsis of the species of starfish of the British Museum.

(N.B. "dorsal warts": madreporites)

REQUESTS AND INFORMATION

Julio Vasquez Castro (Universidad del Norte, Departmento BiologiaMarina, Sede Coquimbo, Chile) is studying sea-urchin kelp relations and the development of barren grounds.

L.G. Endelman (Paleontological Institute, Academy of Sciences, Profsojusnaija ul., 123 II7868 GSP-7, Moscow V-321) is interested in the Order Holectypoda and Mesozoic regular echinoids.

Le Menn (Lab. Paleontologie & Stratigraphie, Univ. de Bretagne Occidentale, 29287 Brest Cedex, France) is interested in biostratigraphy and the Paleozoic.

Eizo Nakano (Bioscience Research , Nijigaoka 1-7, Nagoya 465, Japan) is working on the developmental biology of sea urchin eggs.

Deborah L. Zmarzly (Ocean Monitoring Program, 4077 North Harbor Drive, San Diego, CA 92101) is interested in symbiotic relationships, especially in crinoids.

Mauro de Moura-Britto (Instituto de Terras, Cartografia e Florestas, Rua Desembarga dor Motta, 3384, 80410 Curitiba, PR, Brasil) is doing research on the distribution of Stelleroidea from the continental shelf, coastal and estuarine regions.

Keith Serafy (Biology, Southhampton Collelge, Southampton, NY 11968) is interested in the age and growth of echinoids.

E. Gluchowshi (Dept. of Earth Sciences, Laboratory of Paleontology and Stratigraphy, Mielczarksiego Str. 60, 41-2000 SOSNOWIEC, Poland) would like information on the mechanism, range and tempo by which Recent crinoid larvae disperse.

Robert Black (Dept. Zoology, Univ. of Western Australia, Nedlands, W.A. 6009, Australia) is interested in recruitment of asteroids and echinoids.

Jacob Dafni (Steinitz Marine Laboratory, Box 469, Eilat, Israel) is interested in teratology of echinoderms.

Georges Ubaghs has retired, but is working at home (28 Bois le Comte, B-4941 Gromze-Andoumont, Belgium). He is interested inEocrinoids, Homostelea and Homoiostelea (Soluta)

Peter Castro (Dept. of Biology, California Polytechnic Univ., Pomona, CA 91768-4032) is interested in echinoderms as host for symbioses (parasitism, commensalism, etc.). Would like to know of records of eumedonid crabs (genera Harrovia, Ceratocarcinus, Echinoecus, Zebrida, Eumedonus, etc.) associated with crinoids or echinoids throughout the Indo-West Pacific regions.

A. Vadet (47 Bld. Eurvin, 62200 Boulogne sur mer, France) is the curator of the natural history collections of the Museum of Boulogne sur Mer. Is studyingh Jurassic echinoids and is currently revising the'Cidaris' from the Oxfordian and lower Kimmeridege of northwest Europe. Would like to

receive reprints of echinoderm papers, particularly on Jurassic echinoids, because the library of the museum was destroyed in thelast war.

M. Hishi (Tokyo Institute of Technology, Ookayama, Neguro-Ku, 152 Tokyo, Japan) is studying the mechanism of fertilization, particularly the acrosome reaction.

D.G. Stephenson (Dept. of Geology, University of Keele, Keele, Staffordshire ST5 5BG, UK) is interested in Tertiarry cidaroids.

Michale Kyte (11025 44th Street SE, Snohomish, WA 98290) is working on a collection of ophiacanthid ophiuroids from the Berring Sea that have 8 to 10 arms and brood their young. Would appreciate hearing from others who have worked on or has recent information about such species since Mortensen completed his Discovery Reports in 1936. Would especially like to see specimens of Ophiacantha vivipara from the Antarctic.

Coral Reef Conservation Project
Fishing in Kenya: the impact of echinoids

Timothy McClanahan. Institute for Wetlands, University of Florida, Gainesville, 32611, U.S.A.

The coral reef conservation project was developed in 1984 to study the ecological effects of humans on coral reefs. Coral reefs are an important resource for many tropical developing countires as a source of food and income, particularily through fishing, shelling and tourism. The project was initiated in Kenya which has accessible coral reefs, a large tourist, fishing and shelling industry, and three marine parks within a short distance of each other. Shell collecting was originally perceived as the major environmental problem. However, shell collecting is less important than the 2 to 3-fold increase in sea urchin density resulting from overfishing. Most predation is due to fish (particularily triggerfish) and little to gastropods. Bioerosion rates by sea urchins are 1 to 2 orders of magnitude higher than fish herbivores such as parrotfish. In addition, coral cover and topographic complexity are reduced from sea urchin feeding. The community structure dynamics within this assemblage of ca. 10 sea urchin species appears to be controlled by predation. Echinometra mathaei, the species most susceptible to predation and the top competition in this assemblage, dominates in the lowest predation sites. The integral effect is a reduction in diversity and the ecological functions (i.e. fisheries productive, shoreline protyection) on reefs exposed to heavy fishing.

Fisheries management plans are needed for countries such as Kenya, which hope to use their coral reef fisheries as a source of food and income. Kenya is a leader in coral reef and marine resource management but additional research is needed to determine the appropriate level of utilization on reefs exposed to long-term fishing pressures. This and ecological issues with management applications are the future research goals of theproject.

Those who have observed similar high densities of sea urchins on tropical Pacific reefs are asked to write the author.

The following questionnaire is reprinted from the Coral Reef Newsletter (June 1988, No. 19. Prepared by the Pacific Science Association Scientific Committee on Coral Reefs and the University of Guam Marine Laboratory. Responses should be sent to Timothy McClanahan, Center for Wetlands, University of Florida, Gainesville, Florida, USA.

INDO-PACIFIC SEA URCHIN QUESTIONNAIRE

Name:

Address:

1. **Location of reef:**

2. **Name of reef:**

3. **Type of reef (fringing, patch, barrier, etc.):**

4. **Section of reef (reef flat, reef crest, lagoon, etc.):**

5. **Rank the genera of echinoids from most to least common, and estimate their population densities.**

		Estimated density per m^2				
	Rank	<1	1-5	6-10	11-20	>20
Astropyga						
Diadema						
Echinometra						
Echinostrephus						
Echinothrix						
Stomopneustes						
Toxopneustes						
Tripneustes						
others						

6. **Have you noted any changes in the species populations over time?**

   Species:

   Increases _____ **Decreases** _____ **No changes** _____

7. **Are Echinometra found in or outside of crevices? What percent are in crevices?**

   Percentage: 0 _____ **1-20** _____ **20-40** _____

   40-60 _____ **60-80** _____ **80-99** _____ **100** _____

8. Are Echinometra found in lagoonal areas and to what depth (in relation to tides or datum)?

Depth: MHWN to MLWN _____ MLWN to MLWS _____

MLWS to -1 m _____ -1 m to -2 m _____

-2 m to -3 m _____ > -3 m _____

9. How far is the reef from shore?

Distance: < 100 m _____ 100-500 m _____ 500-1000 _____

1 - 5 km _____ > 5 km _____ other _____

10. How densely populated by humans is the adjacent shoreline (persons/km^2)?

<1 _____ 1-10 _____ 10-50 _____ 50-100 _____

100-1000 _____ >1000 _____

11. Is fishing common on this reef? Do the fishermen commonly travel by foot, sailboat or motorboat? Please check the fishing methods used.

Transportation: Foot ___ Sailboat ___ Motorboat ___

Other _____

Fishing methods: Line fishing _____ Trap fishing _____

Pull seining _____ Beat seining _____

Spear fishing_____ Poisoning _____

Dynamiting _____

Other _____

12. Are the following fished, eaten, or collected?

Triggerfish _____ Wrasses _____ Pufferfish _____

Cypraecassis _____ Charonia _____

Additional comments:

TUMORS IN ECHINODERMS (communicated by Albert C. Smith)

Literature on tumors of marine invertebrates is small, and particular with regard to echinoderms (for an overview, see: Sparks, A.K., 1985. Synopsis of invertebrate pathology, pp. 125-127. Elsevier Science Publishing Co., New York).

Fontaine, Q.R. 1969. Pigmented tumor-like lesions in an ophiuroid echinoderm. In: Neoplasms and related disorders in invertebrate and lower vertebrate animals. National Cancer Institute, Monograph 31: 683-691.

Smith, A.C., R.L. Tayloer, H. Chun-Akana, and F. Ramos. 1973. Intestinal tumor in the sea cucumber, Holothuria leucospilota. J. Invert. Pathol. 22:203-212.

How to recognize a tumor? As a practical guideline, look for an abnormal mass of tissue, often a lump, the growth of which has exceeded and is uncoordinated with that of normal tissues. The mass, typically, is purposeless and nearly autonomous.

DATA BASE FOR ECHINODERMS

Thomas Ebert (Biology, San Diego State University, San Diego, CA 92182)

For various research projects over the past 20 years I have tried to obtain original data gathered by other workers and have met with mixed success. It has become clear that data are being discarded or otherwise lost at an alarming rate and so, not infrequently, it is necessary to regather data if a new analysis is to be performed. For example, the 'gonad index' was a useful calculation in examining the annual reproductive cycle in Strongylocentrotus purpuratus and monthly samples were taken for a decade in central California during the 1950's and 1960's. Also, monthly samples were gathered for three years at various sites from Washington to Baja California. Because the gonad index is insensitive to allometric changes, I wanted to reanalyze all of these data to look at latitudinal trends and wrote to the investigators who had gathered the data. All of these data have been discarded and so are lost! I have been able to obtain some data sets from other workers but it is distressing that such a valuable resource as the primary data have so frequently been thrown away. I would like to initiate a data conservation effort and propose three items that would aid in this effort:

1) All of us should require our students to publish all of their raw data as appendices to their theses or dissertations.
2) I urge workers to initiate a technical series of publications through their local marine laboratory or university department in which all data would be published.
3) A cooperative technical series of publications could be formed through a single university. I would be willing to edit and produce such a series at San Diego State University as a techincal publication of the Center of Marine Resources.

SPELLING OF SPECIES-GROUP NAMES FORMED FROM NAMES WITH THE LETTER ø: THE CASE OF Ophiothrix orstedii

Gordon Hendler

In the echinoderm literature there is a question as to the correct spelling of specific names that are written (sometimes interchangeably) with the letter ø or ö. According to the International Code of Zoological Nomenclature (Third Edition, 1985: Article 32d[i]) "A name published with a diacritic mark, apostrophe, diaeresis, or hyphen...is to be corrected...by the deletion of the mark concerned, except that when in a name published before 1895 and based upon a German word, the umlaut sign is deleted from a vowel, the letter 'e' is to be inserted after that vowel (if there is any doubt that the name is based upon a German word, it is to be so treated). An example provided is that mjøbergi is corrected to mjobergi, but mülleri (published before 1895) is corrected to muelleri.

It is not too likely that Danish names written with the letter "ø" are "based upon a German word". The letter appeared on 10th Century runic stones, and was used in the earliest written Danish documents. However, how can we verify that a name spelled with ø or ö is not German - even if the name is proposed by a Scandinavian student of the echinoderms, or honors a Scandinavian scholar? I have been concerned with the matter of the correct spelling of one of the most common Caribbean ophiuroids, the species named Ophiothrix Ørstedii by Lütken (1856), and subsequently spelled O. Ørstedii, O. oerstedii, and O. oerstedi.

Mrs. Karen J. Friedmann, a museum associate of the Natural History Museum of Los Angeles County, looked into the origin of the name Ørsted and concluded that it is of Danish origin. Her report, presented below, documents that point and describes some of Dr. Ørsted's contibutions to science. Since the name Ørsted is not German, species bearing that name should be spelled "orstedii". Finally, in the case of Ophiothrix orstedii there is a question as to whether -ii is the correct suffix of the species-group name. The original spelling appears to be correctly based on a latinization of Ørsted, and since it does not contravene ICZN Article 31, it is thus "to be preserved unaltered" (Article 32b).

What is the correct spelling of the other patronyms with an umlaut which have been proposed by and for the Scandinavian scientists? Perhaps our Scandinavian colleagues could shed some light on the question.

ANDERS SANDØE ØRSTED (1816-72)

Karen J. Friedmann

The Dr. Örsted cited by Dr. Chr. Lütken, is the botanist A. S. Ørsted, nephew of the legal scholar and high government official of the same name and of the famous physicist H. C. Ørsted (discoverer of electromagnetism), as well as a direct descendant of the parson Søren Olufson (1582-1636) who took the name of the town Ørsted, where he served.

Dr. Ørsted's 1843 doctoral thesis was entitled "De regionibus marinis". In 1845 he went to the Danish West Indian islands as a zoologist to study the marine fauna, and after a couple of years he went to Jamaica, Nicaragua and Costa Rica. During that period he collected the echinoderms upon which Lütken based many of his species descriptions. However, Ørsted became so interested in the rich New World tropical vegetation that he returned to Denmark a botanist. In 1849 he reported his "Observations on a heretofore unknown general distribution of microscopic plants in the world ocean." He drew the conclusion that in the ocean all animal food is ultimately derived from plants, an interpretation strongly doubted by his contemporaries. In 1859 came his last zoological work "Pentacrinus Mülleri", and in 1862 he became professor of botany at the University of Copenhagen. Ørsted was prolific and often embroiled in controversy. His biographer states that in marine ecology he was in some respects far ahead of his time, that he was a pioneer in the systematics of worms, and that his extensive collections from Central America were of great importance for Danish zoology (based on Dansk Biografisk Leksikon).

The name Ørsted consists of two elements ør and sted. Both occur in many Danish place names, Ør means gravel, pebbles, or a sandy gravelly beach. Sted is an inhabited place. Ør it is stated, corresponds to the Norwegian aur, old Nordic aurr, and old English ear (earth). Dansk Stednavnsleksikon lists four towns named Ørsted, one of them in Djursland in Jutland, the home of the ancestral parson (based on Ordbog over det danske Sprog, Danske Etymologisk Ordbog, and Dansk Stednavnsleksikon).

Thus, several encyclopedic sources are in agreement regarding the origin of the name Ørsted, and the picture seems consistent, logical and reasonable. But there is a second theory! Johannes Steenstrup, a scholar who published a study of Danish place names, has this to say, "Øther was, according to old legends, the lover of the shy and timid Sigrid, and this name has left its mark in 10 Ørslevs and 4 towns named Ørsted" (from Danske Stednavne. Deres Tolkning og Hvad de Oplyser om vort Lands Bebyggelse og Folkets Kultur gennem Tiderne).

So there you are! But whichever explanation you accept it is clear that Ørsted is a very old Danish name, which I take it is all that matters for your purposes.

UNIQUE OCCURRENCE OF ECHINODERMS IN INUIT(ESKIMO) ART

In the backroom art collection of the Department of Indian and Northern Affairs in Ottawa I found an echinoderm treasure! The depiction of marine invertebrates apparently represents a rare phenomenon in Eskimo(called Inuit in Canada) art. The photograph is of "Sea Bed", a 1980 stone carving by Mina Crow a Labrador Inuit. She lives in the Belcher Islands(now called Sanikiluaq) (≈56-57°N: 79-80°W) in the southeast corner of Hudson Bay. There are 4 Mytilus(?), 6 S. droebachiensis(?) and 1 Asterias(?). The little animals are mounted with wooden pegs to the 20X24 cm stone base. The echinoderms all have the symmetry of 4!

I was charmed by this work and began searching for pieces with related themes. Two others were finally located: "Shells" by Sarah Kauluarok [1969] (3 Mytilus-1 urchin pegged to a stone base) in the Canadian Museum of Civilization collection and "Sea Urchins" by Annie Ohaytook [1970's] (5 urchins pegged to a stone base) from a catalogue of a 1981 Winnipeg Art Gallery show. Both these Inuit women artists are also from Sanikiluaq and of the Labrador tribe.

There are over 40 designated Inuit Art Centres spread across Canada's vast Arctic area, yet only Sanikiluaq depicts marine invertebrates in its art. According to Canadian experts, fish, birds and mammals are the animal forms in Inuit art. Moreover, the Eskimo art expert at the Smithsonian knew of no modern marine invertebrate figures and only one instance(a tiny snail figure in a monograph) in ancient Eskimo art(Dorset Culture ≈500 AD: Labrador Coast).

So, why only Sanikiluaq and why only women carvers? Sanikiluaq is quite south for a coastal Inuit settlement. Arctic ecologists report large aggregations of S. droebachiensis in Sanikiluaq's shallows. Perhaps this southerly location experiences less winter ice scour than the ravaged coasts farther north and thus provides better habitat for shallow-water fauna. Apparently the local Inuit do eat sea urchins (gathered by women-the men hunt) and perhaps that is why the women carve them.

NORM SLOAN

THESES AND DISSERTATIONS

Theses and dissertations are a valuable resource for researchers. Many are never published. Publications rarely contain all of the information or development found in them. With the inclusion of dissertations from the USSR in this issue of the newsletter, the list of theses and dissertations is now probably relatively complete. Titles of those that have been missed and of new works should be sent to the newsletter for inclusion in future issues.

Bachelor's theses

Ireland

Byrne, M. 1978. The phenomenon of aggregation in echinoderms with particular reference to the ophiuroid Ophiocomina nigra (Abildaarg) and the crinoid Antedon bifida (Pennant). University College, Galway.

United Kingdom

Aung, W. 1975. Observations and reproductive biology of the tropical sand dollar Arachnoides placenta (Echinoidea:Echinodermata). Univ. of Newcastle-on-Tyne.

Master's theses

Australia

Saunders, A.G. 1986. Growth and age of a tropical sand dollar Laganum depressum (Clypeasteroida:Echinoida). James Cook University.

France

(Diplome d'Etude Approfondie)

George, S. 1987. Les strategies reproductives de l'oursin Arbacia lixula (Echinodermata: Echinoidea) a Saint Jean Cap Ferrat. Univ. Pierre et Marie Curie Paris VI.

Berthon, J.-F. 1987. Relations trophique entre quelques especes d'echinodermes et le phytobenthos dans la baie de Port-Cros (Var, France). Univ. Aix-Marseille II (Luminy)

Frantzis, A. 1988. Relations trophiques entre les oursins Arbacia lixula et Paracentrtotus lividus (Echinodea, Regularia) et le phytobentyhos infralittoral superficiel dans la baie de Port-Cros (Var, France). Univ. Aix-Marseille II (Luminy)

(Doctorate de 3o cycle)

Hong, J.S. 1980. Etude faunistique d'un fond de concretionment de type coralligene soumis a un gradient de pollution de Mediterranee nord-occidentale (Golf de Fos). Univ. d'Aix-Marseille II. (Ophiuroids, asteroids, echinoids, holothuroids).

Amouroux, J.-M. 1972. Donnees sur la structure et l'instabilite des peuplements infralittoraux de la cote du Roussillon. Univ. Paris VI. (Ophiuroids)

Nedelelc, H. 1982. Ethologie alimentaire de Paracentrotus lividus dans la baie de Galeria (Corse) et son impact sur les peuplements phytobenthic. Univ. Paris VI-Univ. d'Aix-Marseille III.

Do, F. 1963. Etude cinetique du calcium dans l'oeuf d'Arbacia lixula (Echinoderme) vierge et feconde. Univ. Lyon.

Vasquez-Montoya, R. 1979. Peuplements des herbiers de Thalassia testudinum et d'Halodule sp. de la cote Caraibe de Panama. Univ. d'Aix-Marseillel II. (ophiuroids, echinoids).

Azzolina, J.-F. 1982. Dynamics des populations de Paracentrotus lividus dans la baie de Port-Cros (Var): donnees preliminaries. Univ. d'Aix-Marseille II.

Canada (M.Sc.)

Emerson, I.P. 1973. Aspects of the biology and local distribution of sea-stars inhabiting a sloped, rocky bottom in Logy Bay, Newfoundland.

Raymond, B.C. 1986. Behaviour and growth of the early life history stage of the sea urchin Strongylocentrotus droebachiensis. Dalhousie Univ.

Younglao, D. 1987. Spawning, aggregation and recruitment in the black sea urchin Diadema antillarum. McGill Univ.

Geary, E.D. 1978. Oogenesis in the Pacific sand dollar, Dendraster excentricus (Eschscholtz). Univ. of Alberta, Edmondton.

Japan

Kariya, Y. 1986. Studies on the texture of muscles of a few marine invertebrates. Univ. Tokyo.

Australia (M.A.)

Silver, H. 1983. Evisceration in holothuroids from the Indo-West Pacific region. Univ. Queensland.

United States (M.A.)

Edwards, S. 1986. The effect of spine damage and food shortage upon the allocation of resources in the purple sea urchin, Strongylocentrotus purpuratus. San Diego State Univ.

Frnsler, S.C. 1983. Phenotypic plasticity of skeletal elements in the purple sea urchin, Strongylocentrotus purpuratus. San Diego State Univ.

Russell, M.P. 1984. Life history traits and resource allocation in the purple sea urchin, San Diego State Univ.

Jones, S. 1960. Early embryology of Psolus chitonoides. Univ. Washington, Seattle.

Herrlinger, T.J. 1983. The diet and predator-prey relationships of the sea star Pycnopodia helianthoides (Brandt) from a central California kelp forest. San Jose State College, California.

McKinney, M.L. 1982. Ontogeny, phylogeny, and post-deposition alteration of the oligopygoid echinoids of the Ocala limestone. Univ. of Florida, Gainesville.

Clement, C.R. 1981. The occurrence and paleoecology of echinoderm assemblages in the Ludlowville shales (Middle Devonian) of western Erie County, New York. Univ. Cincinnati.

Edwards, K. 1988. Characterization and inhibition kinetics with cadmium of cytoplasmic malate dehydrogenase purified from the pyloric caeca of Luidia clathrata (Say) (Echinodermata: Asteroidea). Univ. South Florida, Tampa.

Oliver, G.D. 1987. Population dynamics of Lytechinus variegatus. Univ. of Miami.

Mexico

Caso Munoz, M.E. 1943. Contribucion al conocimiento de los asteridos de Mexico. Univ. Nac. de Mexico.

Brasil (M.Sc.)

Moura-Britto, Mauro de. 1985. Stelleroidea da "Operacao Sveste I" e das regioes costeira e estuarina do estado do Parana, Brasil. Universidade Federal do Parana.

Republic of China

Run, J.-Q. 1985. The mating behavior and reproductive cycle of Archaster typicus Muller et Troschel (Echinodermata: Asteroidea). National Sun Yat-sen Univ.

Chao, S-m. 1986. Systematic studies of the holothurians off south Taiwan. National Sun Yat-sen University.

Chen, J.-C. 1986. Systematic studies of the shallow-water crinoids off Kentin, south Taiwan. National Sun Yat-sen Univ.

Czechoslovakia (R.N.Dr.)

Prokop, R.J. 1965. Significance of the echinoderms in the Stratigraphy and facial research of the Bohemian and European Cambrium and Ordovician. Charles Univ.

Slamova, Radana. 1987. Disarticulated parts of crinoid stems from the base of Zlicho Formation from the "U Kaplicky" quarry, Praha-Zlichor. Charles Univ.

Doctoral dissertations

Austria (Ph.D.)

Tertschnig, W. 1986. Population dynamics and ecology of sea urchins in Mediterranean and Caribbean seagrass communities. Univ. of Vienna.

Papajanopulos, A. 1983. Distribution and biology of Paracentrotus lividus (Lamarck) and Arbacia lixula (Linne) (Echinoidea) in the Saronschien Golf (Greece). Univ. of Vienna.

The Netherlands

Bierens De Haan, J.A. 1913. Over homogene en hetyerogene versmeltingen bij Echiniden kiemen. State University of Utrecht.

Belgium

Lambert, A. 1987. Structure et fonctions des pedicellaires chez les asteries (Echinodermata). Free University of Brussels.

Venezuela (Licenciatura thesis)

Sabrano, A. 1987. Actividad sedimentivor de Holothuria mexicana e Isostichopus badionotus (Echinodermata:Holothuroidea) en bajos de Thalassia. Univ. Simon Bolivar, Caracas.

Czechoslovakia (C.Sc.)

Prokop, R.J. 1968. Family Calceocrinidae Meek and Worthen 1869 in the Bohemian Silurian and Devonian (Crinoidea). Charles University.

Great Britain

Sims, M. J. 1986. Taxonomy and paleobiology of British lower Jurassic crinoids. Univ. Birmingham.

Wilkie, I.C. 1976. A study of the process of ophiuroid arm autotomy. Univ. Glasgow.

Jenkins, A.P.G. 1982. The feeding behavior of the asteroid, Astropecten irrgularis (Pennant) in the Isle of Mann. Univ. Liverpool.

Dimelow, E.J. 1958. Some aspects of the biology of Antedon bifida (Pennant) with some reference to Neocomatella europea. Univ. of Reading.

Simms, M.J. 1986. The taxonomy and palaeobiology of British Lower Jurassic crinoids. Univ. of Birmingham.

Switzerland (Philosophiscan Doktor)

Scharer, R. 1985. Die Wirkung von Raubertum und Konkurrenz auf die Struktur einer Lebensgemeinschaft zweier Seestarnarten in der Natur und im Modell. Univ. Zurich.

Canada (Ph.D.)

Johnson, C.R. 1984. Ecology of the kelp Laminaria longicruris and its principal grazers in the rocky subtidal of Nova Scotia. Dalhousie Univ.

Cameron, J.L. 1986. Reproduction, development, processes of feeding and notes on the early life history of the commercial sea cucumber Parastichopus japonicus (Stimpson). Simon Fraser Univ.

McEuen, F.W. 1986. The reproductive biology and development of twelve species of holothurians from the San Juan Islands, Washington. Univ. of Alberta.

Byrne, M. 1983. Evisceration and autotomy in the holothurian Eupentacta quinquesemita (Selenka). Univ. of Victoria.

Gong, Z. 1987. Regulation of tubulin gene expression in sea urchin embryos. McGill Univ.

Rumrill, S.S. 1987. Differential predation upon embryos and larvae of temporal Pacific echinoderms. Univ. of Alberta.

Mooi, R.J. 1987. A cladistic analysis of the sand dollars (Clypeasteroida: Scutellina) and the interpretation of heterochronic Phenomena. University of Toronto.

Kao, M.-h. 1980. Some aspects of the biology of sea stars Asterias vulgaris Verrill and Leptasterias polaris (Muller and Troschell) in Newfoundland waters. Memorial University, Newfoundland.

Keats, D.W.. 1986. The effects of the experimental removal of green sea urchins, and of ice-scour or sublittoral benthic macaro-algal communities in Newfoundland. Memorial University of Newfoundland.

France (Doctorate d'Etat)

Picard, J. 1965. Recherches qualitatives sur les biocoenoses marines des substrats meubles dragables de la region Marseille. Univ. d'Aix-Marseille (echinoids, asteroids, ophiuroids, holothuroids, crinoids)

Verlacque, M. 1987. Etude structural et dynamique du Phytobenthos et analyse des relations Faunne-Flore. Univ. d'Aix-Marseille II.

Conand, C. 1988. Les holothuries aspidochirotes du lagon de Nouvelle-Caledonie: biologie, ecologie et exploitation. Univ. Bretagne Occidentale.

Scott, G. 1926. Etudes stratigraphique et paleontologique sur les terrains cretaces du Texas. Grenoble.

Gaudy. A. 1852. Memoire sur les precis solides des Stellerides. Paris.

Herrouard, E. 1890. Recherches sur les holothuries de cotes de France. Paris.

Ratto, A. 1988. Expression des enzymes arginine kinase et creatine kinase ches les echinodermes en relation avec la phylogenie de cet embranchement. Univ. Nice.

Tunisia

Zaghbib-Turki, D. 1987. Les echinides du cretace de tunisie. Paleontologie generale: systematique, paleoecology, paleobiogeographie. Univ. de Tunis.

U.S.S.R. (Dissertation candidate, doctor of science) (communicated by G.M. Belyayev, V. Kasyanov, A.N. Solovyev)

Arendt, U.A. 1969. Sea lillies Tsertocrinidae. Paleontological Inst. Acad. Sci., Moscow.

Brikov, V.A. 1981. Individual growth and development in sea urchins. Inst. Mar. Biol., DVNT Acad. Sci., Vladivostock.

Vashenko, M.A. 1985. The influence of water-soluble diesel fuel on gametogenesis of the sea urchin Strongylocentrotus nudus. DVNT. Acad. Sci., Vladivostock.

Borobyev, V.A.1978. Somatic polyploidy in the epithelium of the stomach of the seastyar. Inst. Biol. Develop., Moscow.

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Bent Hansen

26 March 1925 - 18 July 1988

Bent Hansen was born the son of a waiter in a small provincial town in southern Denmark. The family moved to Copenhagen, and there Bent began studying Zoology.

In 1949, one year before the start of the great Galathea deep-sea expedition, Bent was chosen as one of three (with Anton Bruun and Torben Wolff) to remain with the ship for the full two-year cruise. As a result of this appointment he began a study of holothurians, a very significant element of the deep-sea megafauna. At this time he received his Master of Science degree. His tutor at the Copenhagen Zoological Museum, F. Jensenius Madsen, pointed out to Bent the overall importance of making permanent slide preparations of the calcareous ossicles in the skin, for study of taxonomic variation. Also of special importance were sketches and color notes on freshly collected specimens. The Galathea Expedition provided a very rich collection of holothurians from all oceans. They were studied on board, along with other echinoderms; for the rest of his scientific career Bent concentrated his efforts mainly on the holothurians. At his death he left an invaluable reference collection of ca. 1200 microscope slides of elasipod holothurians and ca. 1200 of other species.

After the Galathea cruise he was offered an appointment at the Institute of General Zoology where, in addition to teaching, he worked on hadal holothurians. At the end of his five-year appointment, he became a research librarian at the University of Copenhagen Library (Natural Sciences), with permission to spend one-fourth of his working hours on his beloved sea cucumbers. he also had opportunities to travel to other European museums to study holothurian collections.

In 1961 he accepted the position of Head of the Zoological Museum Library. His first major task was rearrangement of the central and departmental libraries in connection with the move into the new museum building. he also supervised the creation of a catalogue of the rich archives of this centuries-old museum. The museum library has benefitted greatly from his love of order, and his scientific insight.

Along with the demanding obligations as a librarian, Bent continued working on his Elasipoda monograph, based upon Galathea collections and on extensive museum holdings in Europe and the U.S.A. This research was done mostly in his spare time. The publication of the monograph in 1975 and his participation in Echinoderm Conferences made him well-known abroad. He worked particularly closely with colleagues in Great Britain, and was invited on a very successful Discovery cruise in the Porcupine Sea Bight in 1979.

In the 1980's he paid two long visits to the Marine Biological Center at Phuket, Thailand, which cooperates closely with Danish scientists. Here he advised on rearrangement of the library, ran an echinoderm course and workshop, and with two Thai colleagues he collected specimens for a survey of the local holothurian fauna.

It was during this last visit to Phuket in the Spring of 1987 that he first felt exhausted after physical strain. Thorough examinations revealed extensive arteriosclerosis, and surgery was not possible. He had to give up his daily bicycle rides to and from the museum, but he continued work until less than a month before he died, apparently unaffected by the inescapable prognosis.

All those who knew Bent will miss his calm gentleness, his helpfulness and his friendly attitude towards everyone. He will also be missed as one of the most well-informed specialists on deep-sea holothurians. He was always happy to share his insight with those seeking his advice.

In a long list of eminent Danish deep-sea biologists, Bent Hansen is prominent. With the publication of his great monograph in 1975, he revolutionized the study of deep-sea holothurians. These animals, which often comprise more than 95% of the biomass in some deep-sea areas, are notoriously difficult to study and categorize. Bent had the patience, skill and knowledge to make sense of their bewildering diversity. He conferred some stability on the classification, and contributed greatly to our knowledge of the biology and ecology of these animals. For the first time, he made the elasipods available as objects of modern scientific study. Bent's contribution to the series "Marine Invertebrates of Scandinavia" was almost complete at the time of his death. The manuscript will be completed by his mentor and friend, F. Jensenius Madsen.

Torben Wolff and David Pawson

Nous avons appris tardivement la mort de notre ami Enrico TORTONESE à la fin du mois d'avril de cette année, à l'âge de 76 ans.

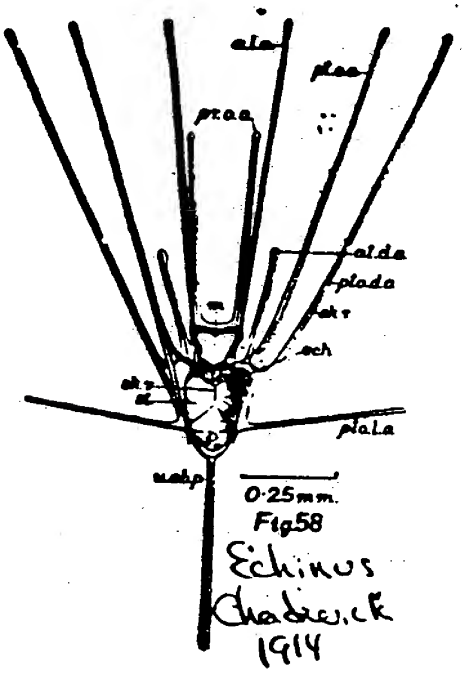
Assistant au Muséum de Zoologie de l'Université de Turin en 1933, il y devint Professeur, puis, à partir de 1955, assuma la direction du Muséum d'Histoire Naturelle "A. Doria" de Gênes.
Sa conception scientifique peut être résumée par cette citation : "mon travail scientifique a été principalement tourné vers la systématique, la zoogéographie et l'écologie, et a été inspiré du principe qu'une solide connaissance du monde de la nature et l'étude des collections sont indispensables au développement de la zoologie".

Enrico TORTONESE était un spécialiste reconnu au plan international des Echinodermes et des Poissons de Méditerranée, de la Mer Noire et de la Mer Rouge , ayant participé à de nombreuses missions, il a rédigé au cours de sa carrière près de 200 publications. Il reste avec les Echinodermes de la Faune d'Italie (1965) l'auteur de la synthèse la plus récente sur les Echinodermes actuels d'Europe.

Aimant beaucoup la France et y faisant de fréquents séjours, il a participé au premier de nos séminaires "francophones", au Muséum de Paris en 1980.

Tous ceux qui l'ont connu appréciaient son élégance innée d'italien, sa curiosité scientifique, ses qualités humaines.

Alain GUILLE, décembre 1987



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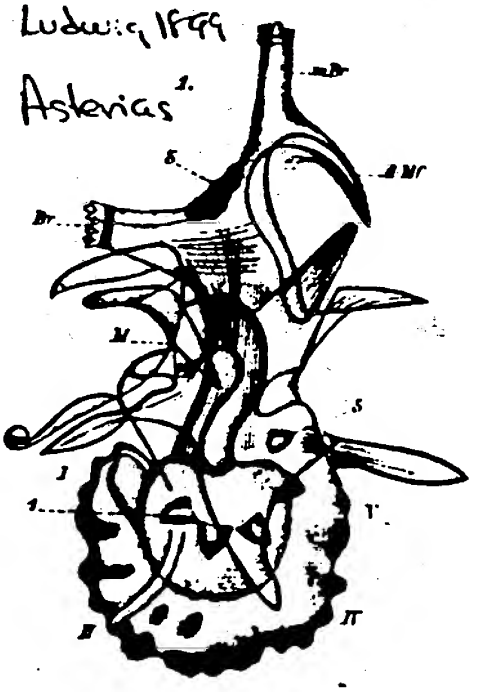
F. Jeffrey Bell (1882, Ann. & Mag. Nat. Hist. ser 5, 9, 166) called attention to the fact that on the title page of 'Dissertatio sistens species cognitas Asteriarum', Nicolaus Bruzelius was designated as author, not Retzius. At the University of Lulnd, from about 1800 to 1850 it was the custom that the professor wrote the paper, while the candidate for the doctorate used it as doctoral thesis and paid the expenses for the printing. Whenever the candidate had written the thesis himself, this was specially stated on the title page. Thus the species of starfish described in the 'Dissertatio' are correctly ascribed to Rezius.



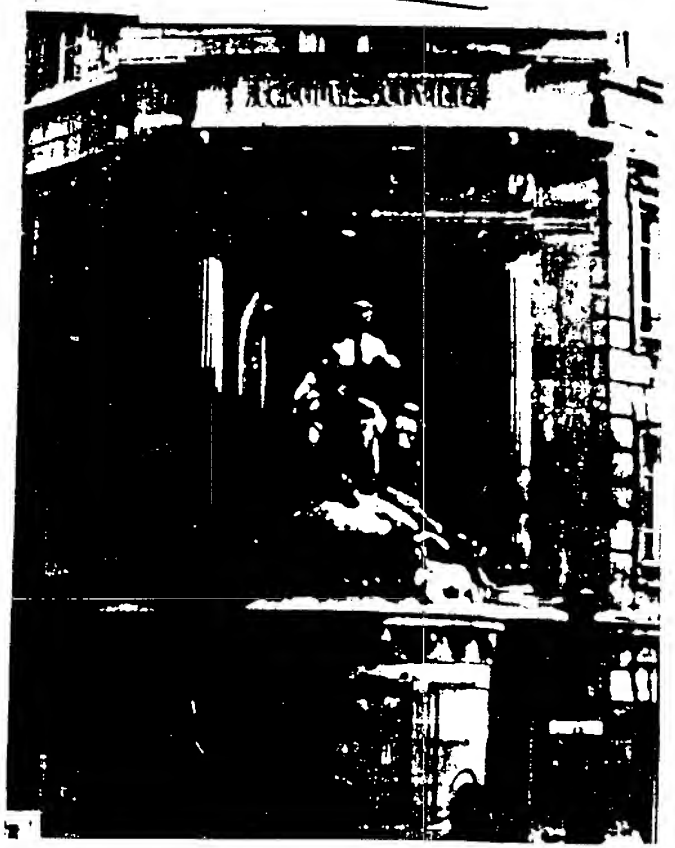
Muséum National d'Histoire Naturelle
Laboratoire de Biologie des Invertébrés Marins et Malacologie
55, RUE DE BUFFON, 75005 PARIS CEDEX 05 — TÉL. 43.31.38.95 - 43.36.22.58

le 9.12.92

Voici, enfin ! les photos de la fontaine Cuvier. J'espère que c'est OK. Amitiés

Féral

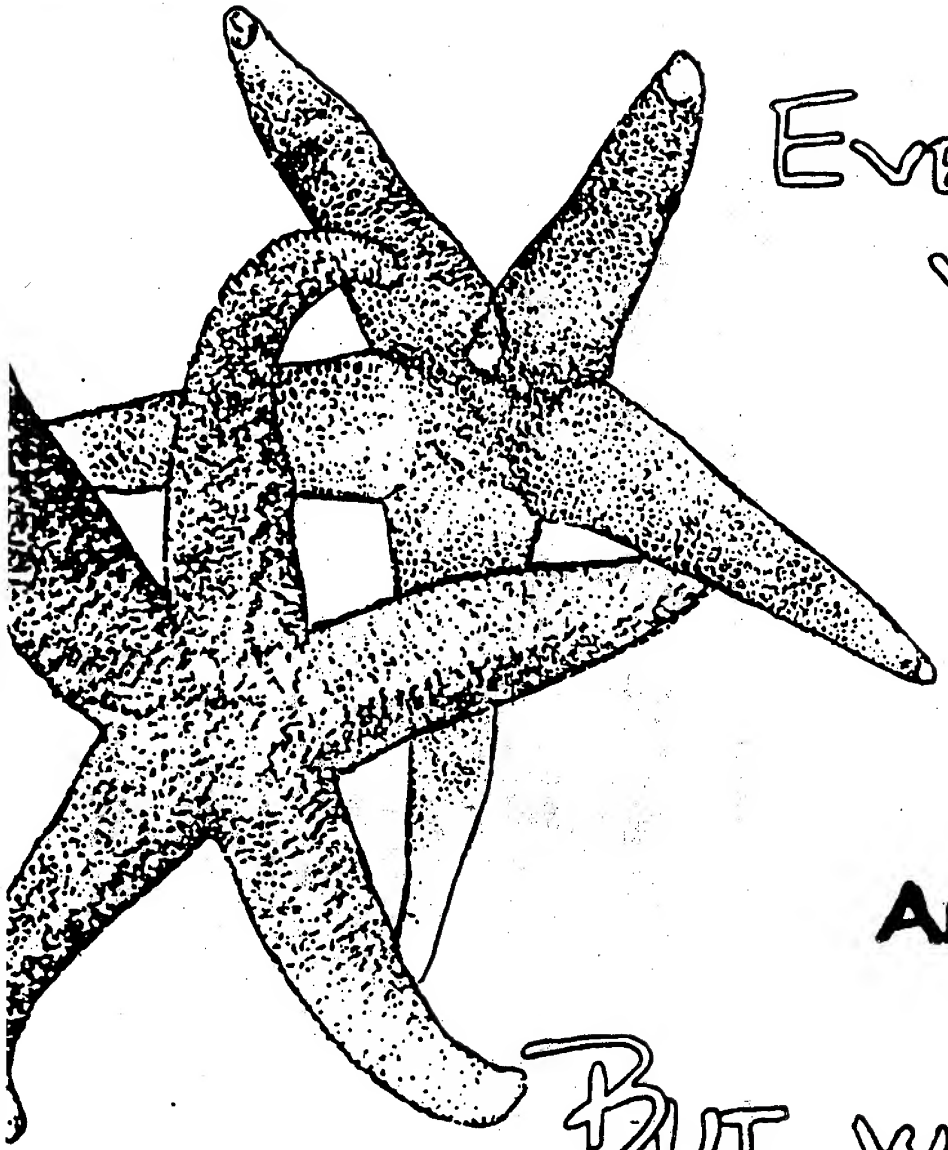
Cher Folin,



The Bigsby Medal

Starfish have many arms.
The arms are called rays.
Starfish have arms, but no legs.

Hurd, E. T. 1962. Starfish. Thomas Y. Crowell Co. N



EVERYTHING YOU EVER WANTED TO KNOW ABOUT SEX AND SEA STARS... BUT WERE AFRAID TO ASK!

An amourous account of studies on sex in sea stars at McMurdo between 1961 and 1985.

Presented By: Dr. John Pearse

Sunday October 27, 1985 USARP Chalet

ALL RESIDENTS OF ROSS ISLAND ARE MOST CORDIALLY INVITED TO ATTEND THIS MOST INFORMATIVE SESSION

Urchin: has nothing to do with the common English usage of the word, referring to small boys, but by way of fishermen, coming from French herisson and herisser: "to bristle", referring to the spines.

Despite this, the well-known woodcut in Forbes' History of British Starfish of two small boys laughingly looking at a hedge-hog (urchin) and sea-urchins may have within it the idea that the boys do not realize that they are also 'urchins'

Cassell's New French Dictionary:
herisson: hedgehog; (rare) urchin
herisson de mer: sea-urchin

THE SEA-URCHINS.

ECHINIDÆ,

OR CIRRHO-SPINIGRADE ECHINODERMATA.

Friday, December 18, 1987

Storms ease grip in West, Midwest; death toll rises

An Associated Press Report

An Alaskan storm that drove traffic on Los Angeles freeways weakened Thursday as the death toll from two powerful storms in one week climbed to 36.

The storm, spawned in the Gulf of Alaska, was blamed for at least seven deaths, including three sea-urchin divers missing and presumed dead after the storm swamped their 42-foot fishing boat Tuesday night.

THE DREDGING SONG

by Edward Forbes

"I give it here from a manuscript which I procured from my late friend Mr. Alder. The last verse is not given in the version published in the Life of Forbes" in: Presidential address delivered at the annual meeting of the Tyneside Naturalists' Field Club, May 27, 1881, by the Rev. A. M. Norman, M.A., D.C.L., F.L.S., etc., with appendices on the fauna of the abysses of the ocean. Trans. Nat. Hist. Soc. of Northumberland, Durham, and Newcastle-on Tyne, and the Tynside Naturalists Field Club 8(1). 1883.

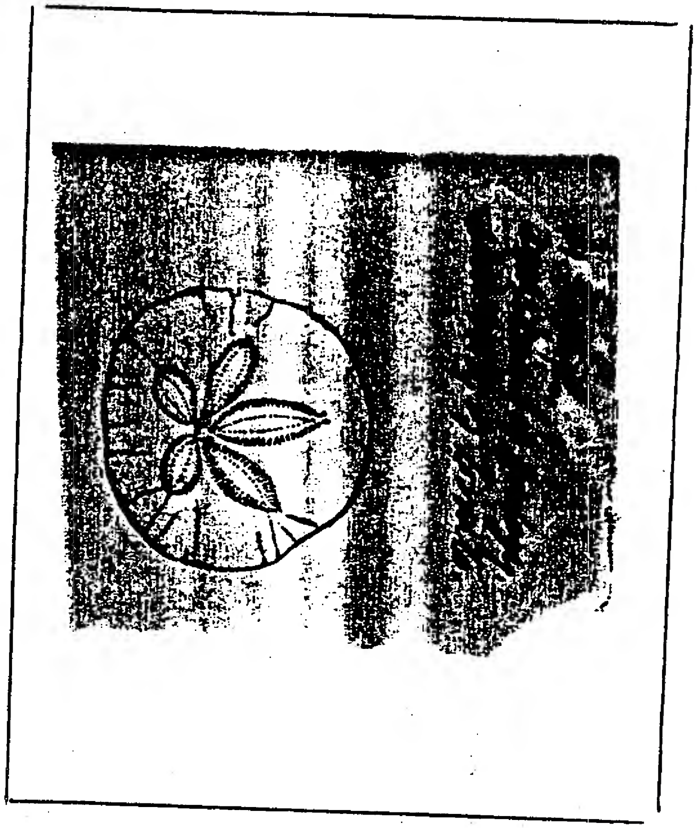
Hurrah for the dredge, with its iron edge,
  And its mystical triangle
And its hided net, with meshes set,
  Odd fishes to entangle!
The ship may rove through the waters above,
  'Mid scenes exciting wonder,
But braver sights the dredge delights,
  As it roves the water under.
Chorus - Then a dredging we will go, wise boys,
        Then a dredging we will go.

Down in the deep, where the mermen sleep,
  Our gallant dredge is sinking,
Each finny shape in a precious scrape
  will find itself in a twinkling!
They may twirl and twist, and writhe as they list,
  And brek themselves into sections,
But up they all, at the dredges call,
  Must come to fill collections.
            Then a dredging, etc.

The creatures strange the sea that range,
  Though mighty in their stations,
To the dredge must yield the briny field
  Of their loves and depredations:
The crab so bold, light a knight of old
  In scaly armor plated;
And the slimy snaill, with a shell on his taill,
  And the starfish radiated.
            Then a dredging, etc.

Were I a fish (though I've no wish)
  For a tail - the more's the pity)
I'd anathematize the prying eyes
  Of the terrible Dredging Committee;
No fish am I, but high and dry
  'Mid dredges take my station,
A-catching the fishes, all at the wishes
  Of the British Association.
            Then a dredging, etc.

(Herdman, W.A. 1923. Edward Forbes, in Founders of oceanography p. 17: "...so some of the happiest of his (Forbes) lighter efforts first made their appearance at the 'Red Lion' dinners. In this particular year (1839), when he gave the scientific results of his Shetland dredgings to the Section, he sang or chanted to the 'Red Lions' his 'Song of the Dredge,' of which I may quote a few verses here:--" (the first three verses are printed)




VIỆT NAM
4
ĐỒNG


3
ĐỒNG
VIỆT NAM


VIỆT NAM
4
ĐỒNG


VIỆT NAM
4
ĐỒNG


3
ĐỒNG
VIỆT NAM

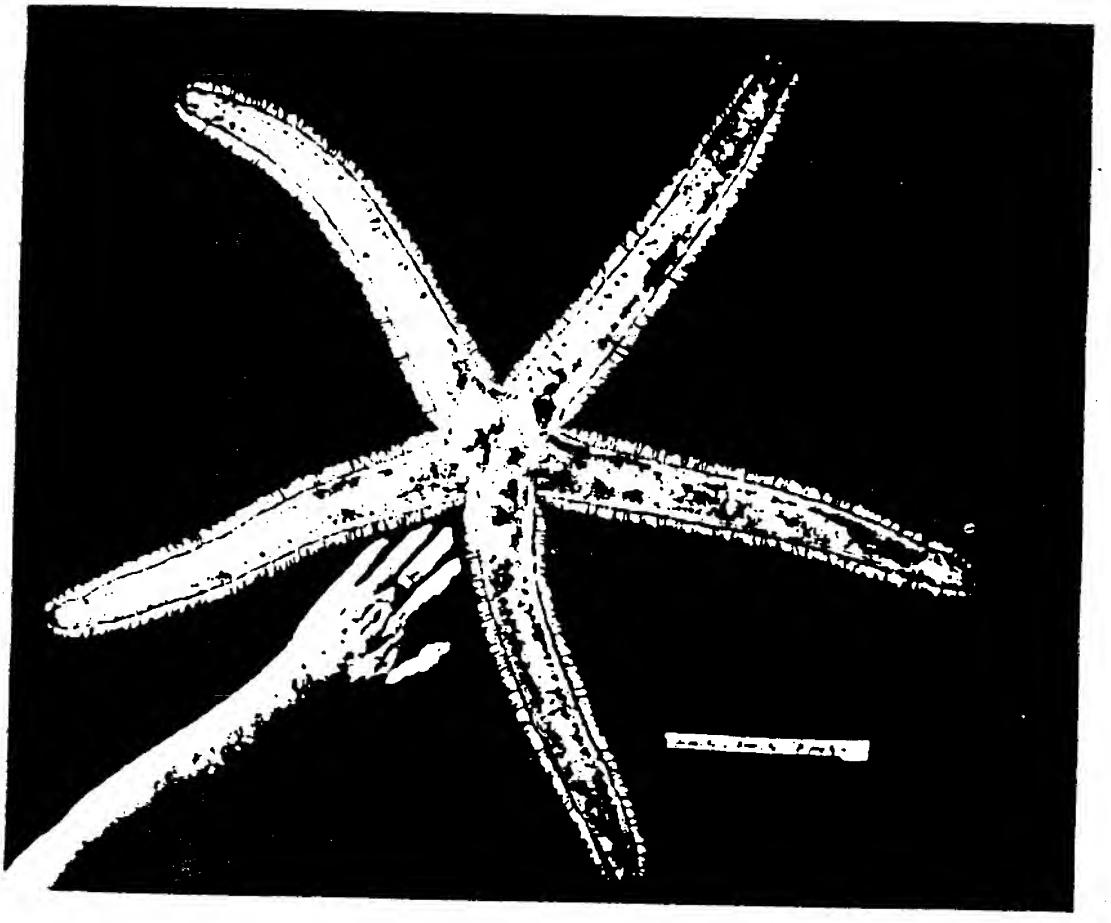

VIỆT NAM
ĐỒNG


ĐỒNG
VIỆT NAM

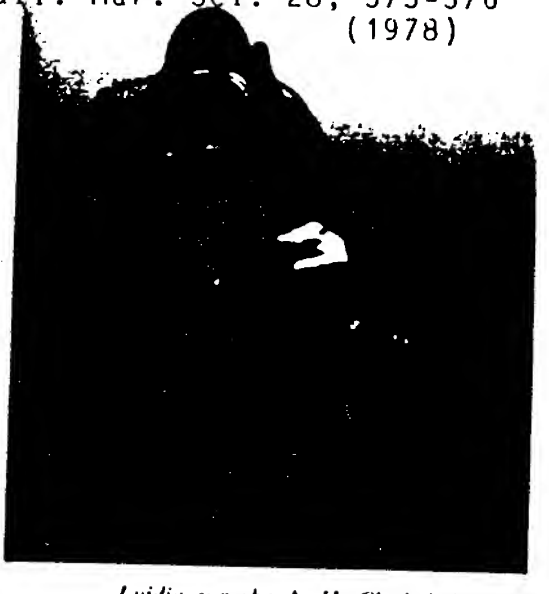
While diving at Tagus Cove, Jerry Wellington discovered a huge sea star which turned out to be *Luidia superba*, A. H. Clark 1917. While it was not a new species it was only the second specimen to be recorded, the first having been collected in 1888 by the Albatross off the coast of Columbia at a depth of 33 fathoms.

(from Noticias de Galapagos. No. 27. 1978)

R = 415 mm



M.E.Downey & G.M.Wellington
Bull. Mar. Sci. 28, 375-376
(1978)



Luidia superba A. H. Clark being collected at 18 m on sand bottom. Tagus Cove. Isabela. Galapagos Islands.

- Bather, F.A. Geol. Mag. N.S. vol. IV. p 134. "Sir - Professor G. Dewalque, writing in your February number....gently turns the Farmennian beds of the Condroz right way up again, from the reversed position into which an annoying slip on p. 543 of paper had thrown them."

- Bather, F.A. 1914. The edrioasters of the Trenton limestone. Geol. Mag., N.S. Dec. VI, Vol. 1, 115-125.

  "The textbook writers, however, generally accepted Edrioaster, and no change was made in either name or description until Professor Haeckell in 1896 thought fit to alter the name to Edriocystis. Neither the nomenclatural nor the taxonomic vagaries of Professor Haeckel won any favour, and it is needless to allude further to him or to other writers who shared his ignorance of the facts but not his imagination...."

- "Paracentrotus lividus prefere les Brunes." M. Verlaque. 1987. Thèse, Docteur d´Etat - Sciences, Université d´Aix-Marseille II.

- "It was quite a surprise to me, when seeing the type specimen of Bell´s Ophiura Koehleri, which was sent to me for examination from the british Museum, to find that it was identical with Koehler´s Ophioperla Ludwigi...Thus it came about that the species dedicated by Bell to Koehler was dedicated again unawares by Koehler to Ludwig. As for Bell expressing his regret that he had not ´something better to offfer to the honour of the distinguished French naturalist who has done so much for our knowledge of Ophiuroids´, there was in reality only reason to regret the bad description he gave; the species is good...." T. Mortensen. Discovery Reports. 1936.

- Echinoderms in literature

  "Slowly, as if her mind were a simple structure like a starfish limb that needed time to make the connection between sensation and grasping, slowly she perceived that something had happened....." Blanche d´Alpuget. 1986. Winter in Jerusalem.

The Barbados Sea Urchin Fishery

A local but economically important fishery for sea urchins (Tripneustes ventricosus) has existed in Barbados, West Indies for more than a century. Barbadians consider the roe a delicacy and large numbers of these "sea eggs" have been fished each year and sold as food. However, the abundance of sea urchins in Barbados has declined dramatically over the past decade and the fishery has effectively collapsed.

During the past 3 years, we have been working at Bellairs Research Institute in Barbados to assess the cause and socioeconomic consequences of the fishery's decline and the potential for its rehabilitation. Our field studies of sea urchin populations, together with information gained from interviewing fishermen, suggest that overfishing was a major cause of the decline, although the possibility of large-scale habitat degradation due to pollution cannot be discounted. In the laboratory, we are studying the developmental rate of the planktonic larvae of T. ventricosus to better understand recruitment processes and to assess the feasibility of aquaculture.

The government of Barbados is clearly concerned about the fate of the fishery and has instituted a 2 year moratorium on fishing sea urchins in an attempt to recover the fishery.

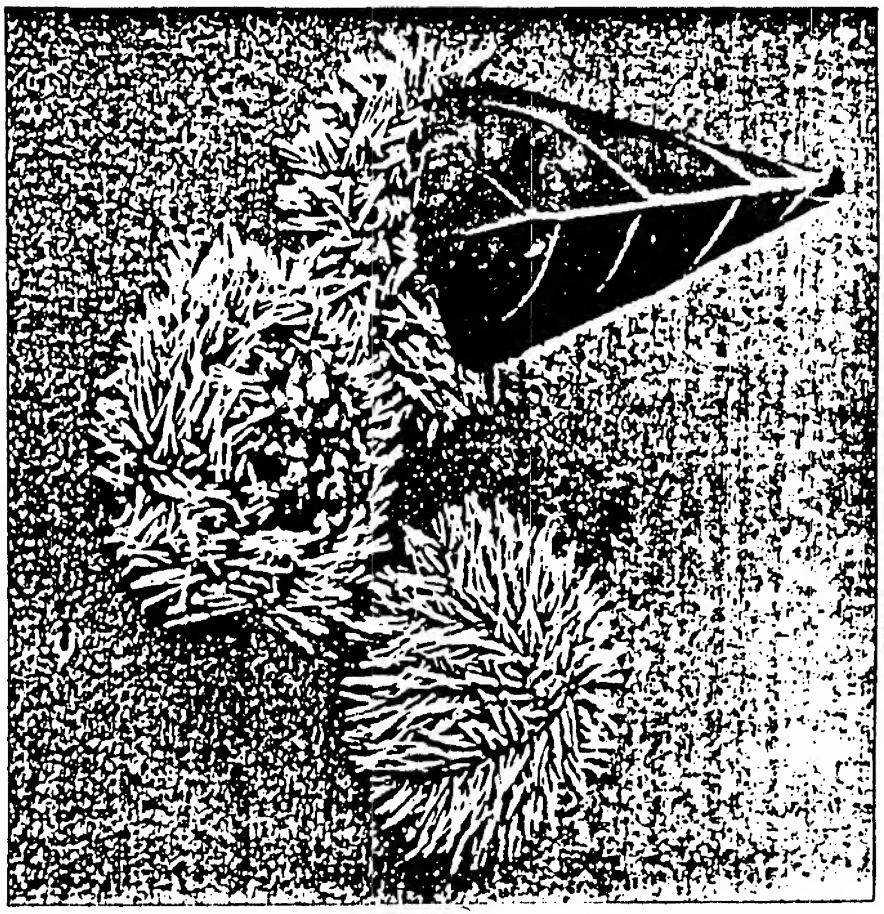
Bob Scheibling, Biology Dept., Dalhousie University, Halifax, Nova Scotia, B3H 4J1

Phil Mladenov, Biology Dept., Mount Allison University, Sackville, New Brunswick, E0A 3C0

Suggested readings:

Scheibling, R.E. and P.V. Mladenov. In press. Decline of the sea urchin (Tripreustes ventricosus) fishery of Barbados: A survey of fishermen and consumers. Mar. Fish. Rev.

Scheibling, R.E. and P.V. Mladenov. Distribution, abundance and size structure of Tripreustes ventricosus on traditional fishing grounds following the collapse of the sea urchin fishery in Barbados. Proceed. 6th Int. Echinoderms Conf., Victoria.



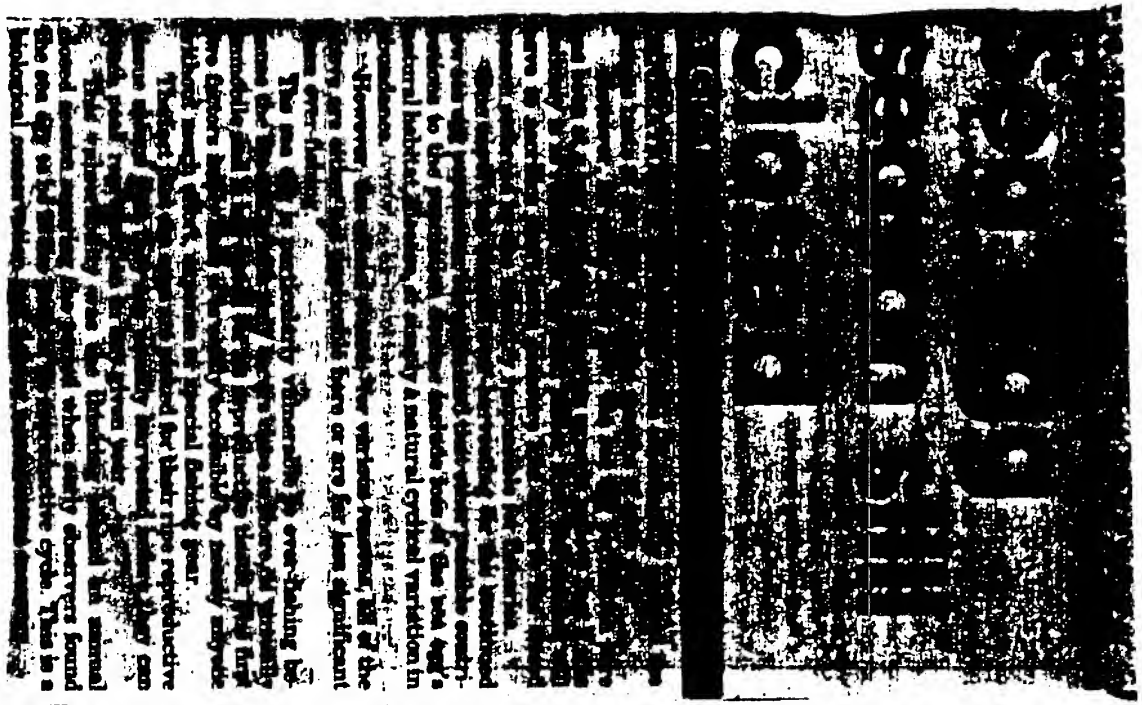
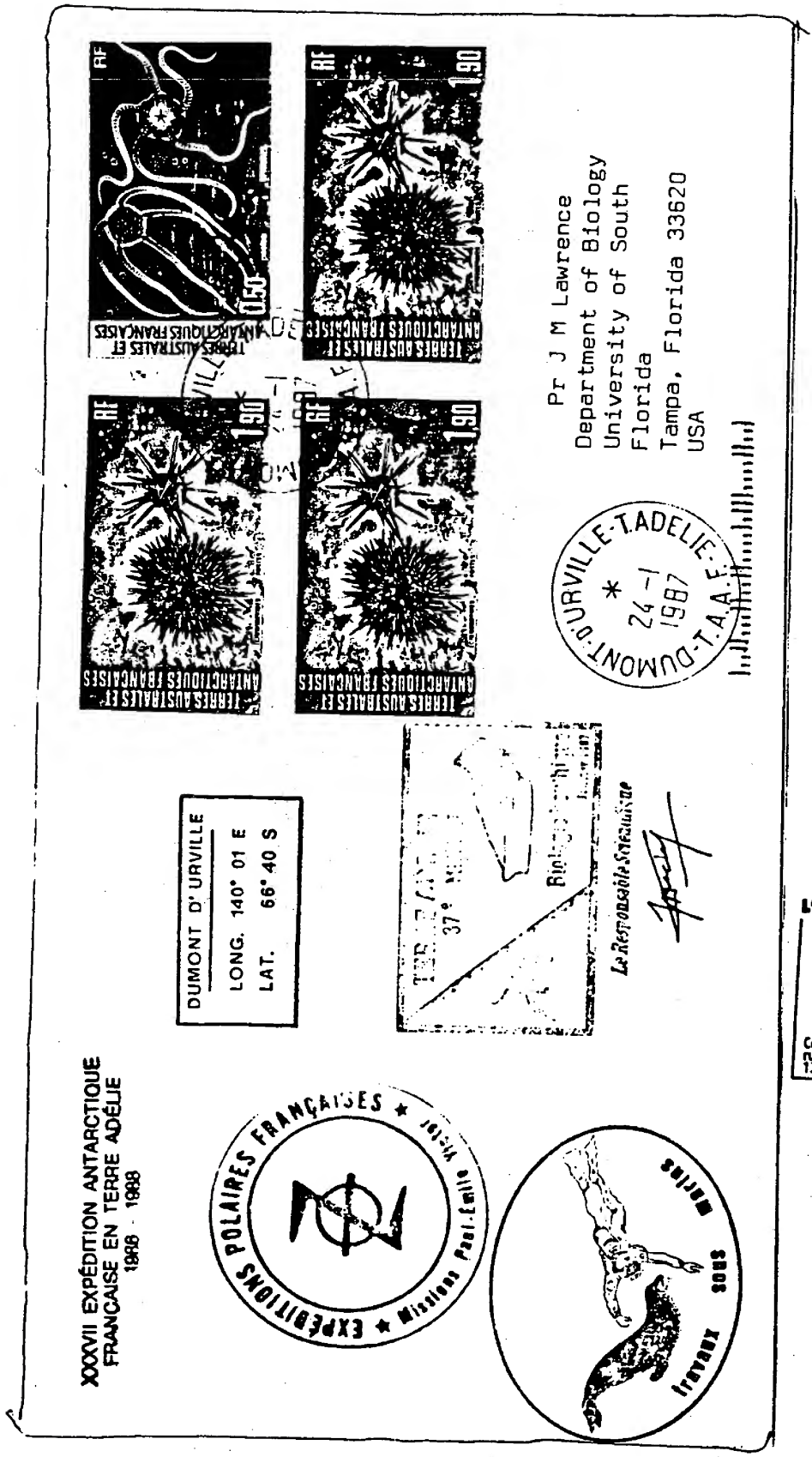
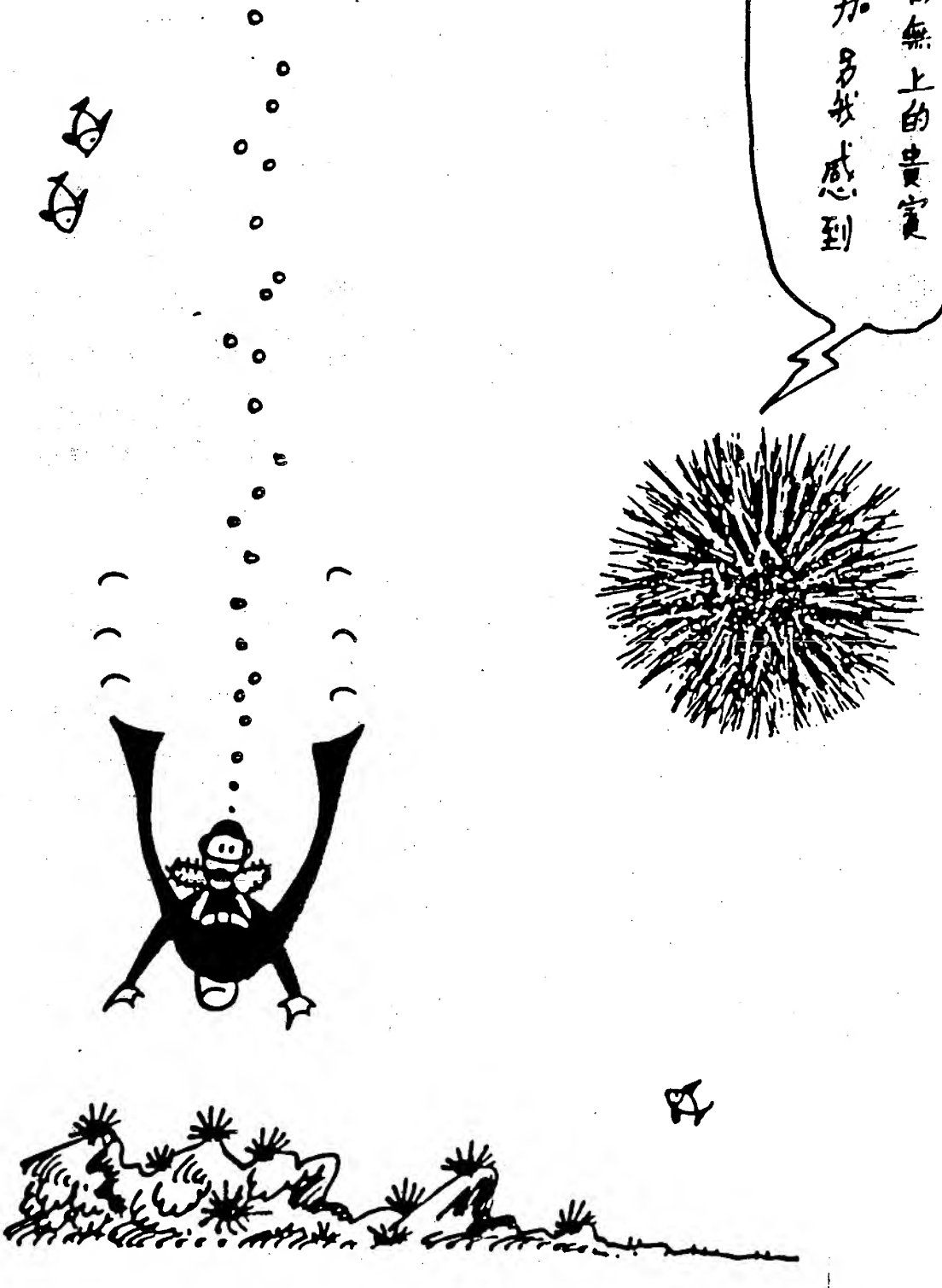
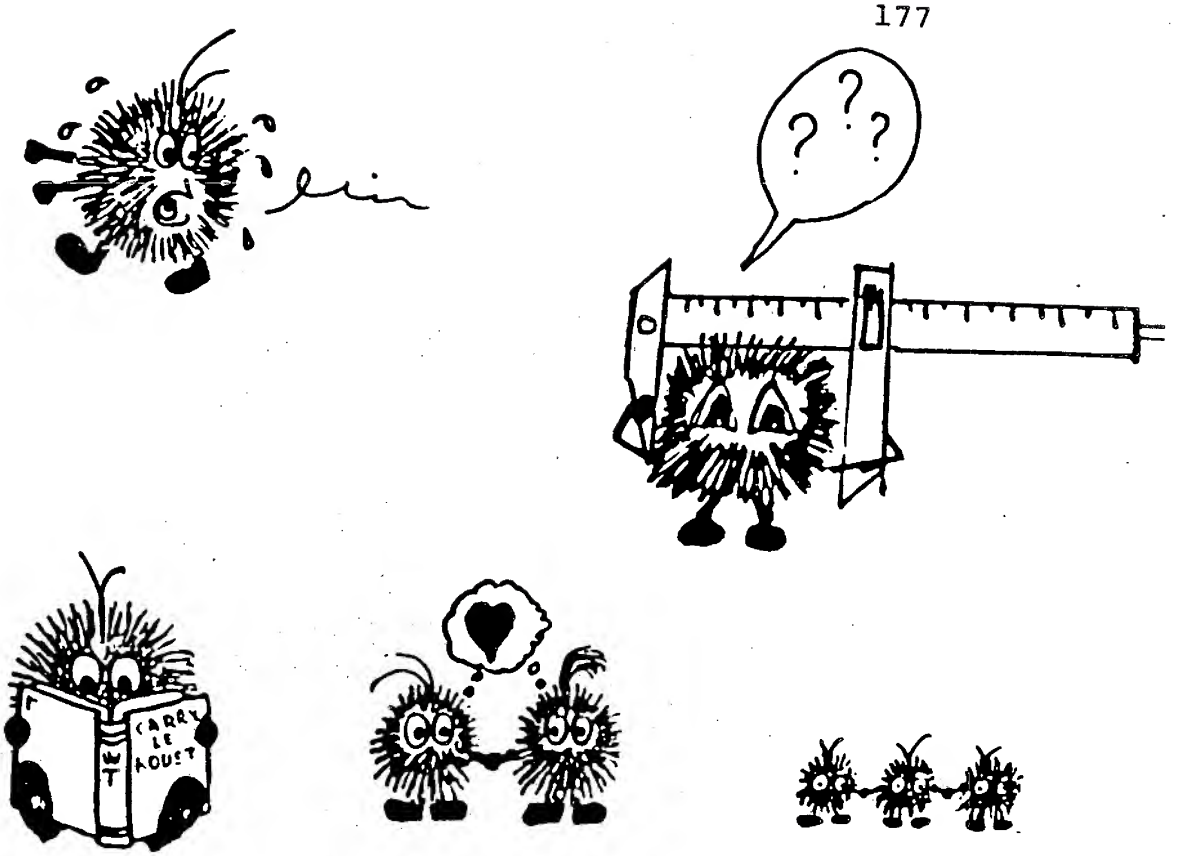


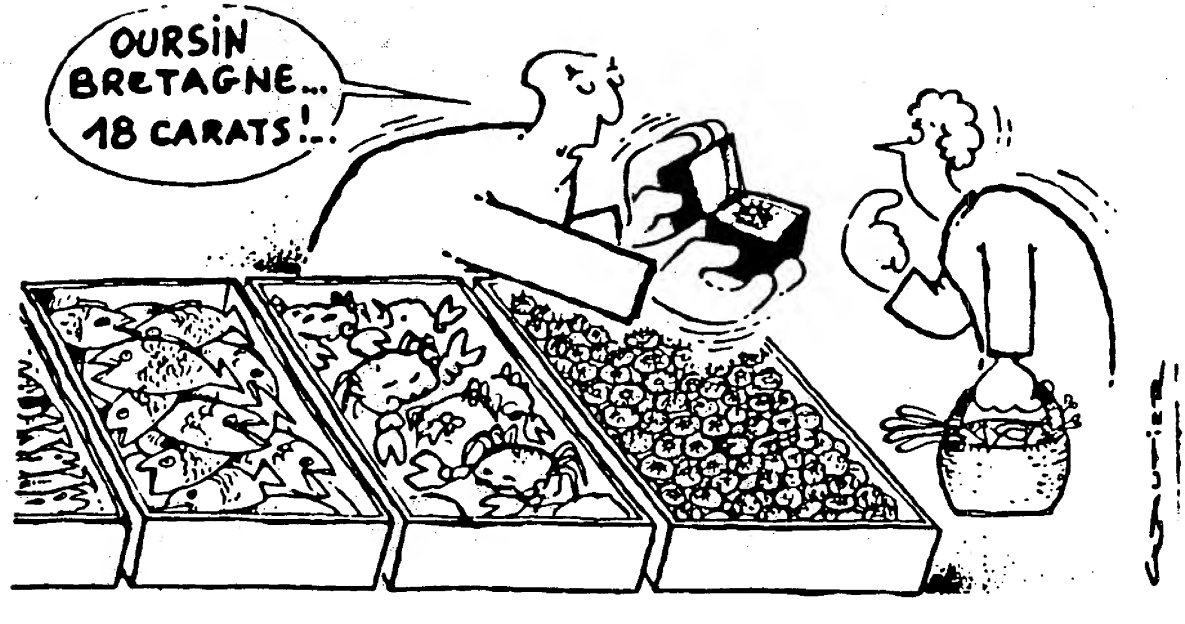
Figure 3.—Marketing of *Tripneustes ventricosus* in Barbados. From left to right: The traditional "shell" with a sea grape leaf cone, shell with leaf removed to show test filled with roe, and an intact sea urchin. All specimens are about 6 cm in horizontal test diameter.



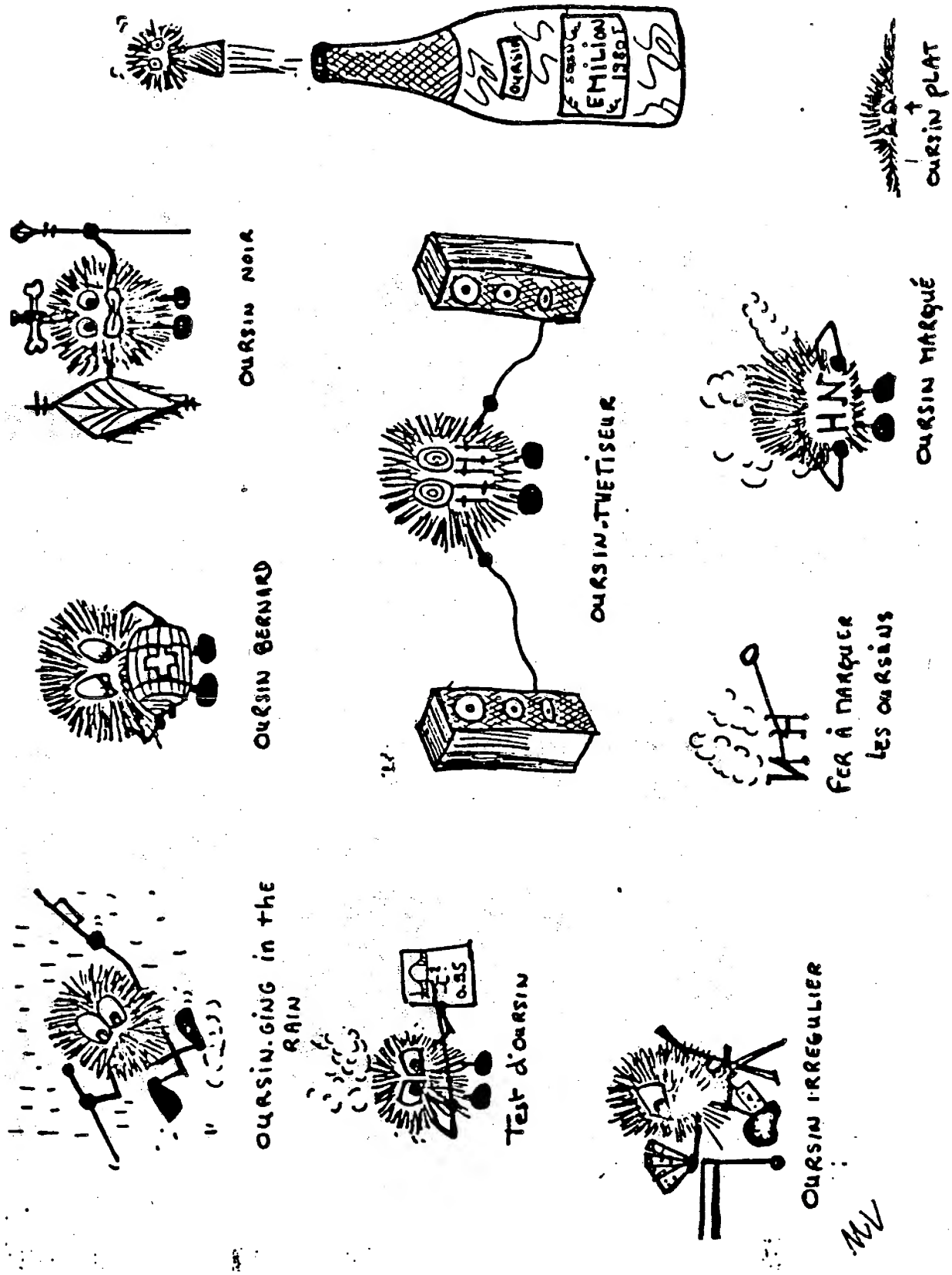
illustrations from the program.
Colloque international sur Paracentrotus lividus, Carry le Rouet




? ? ?
TARRY LE ROUET

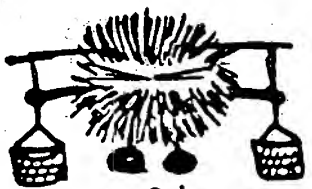

OURSIN BRETAGNE... 18 CARATS!..

Artists for the sea-urchin figures:
H. Nedelec (HN) and M. Verlacque (MV)
Laboratoire d'Ecologie du Benthos, Universite de Luminy



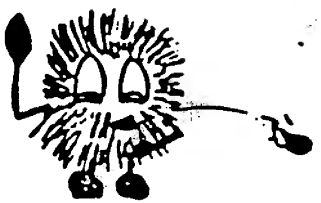
OURSIN TÉLÈNE

OURSIN CRAYON



OURSIN GADOUR

OURSIN ORIGINAL



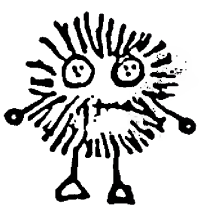
OURSIN CÈRE

OURSIN DOUX

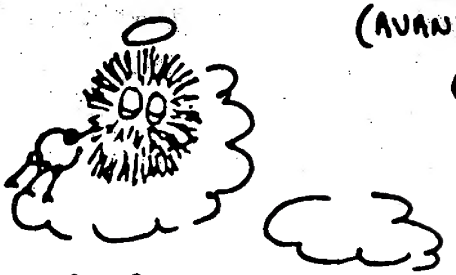
OURSIN CHAUVE (AVANT)

OURSIN CHAUVE (APRÈS)

(= régénération)

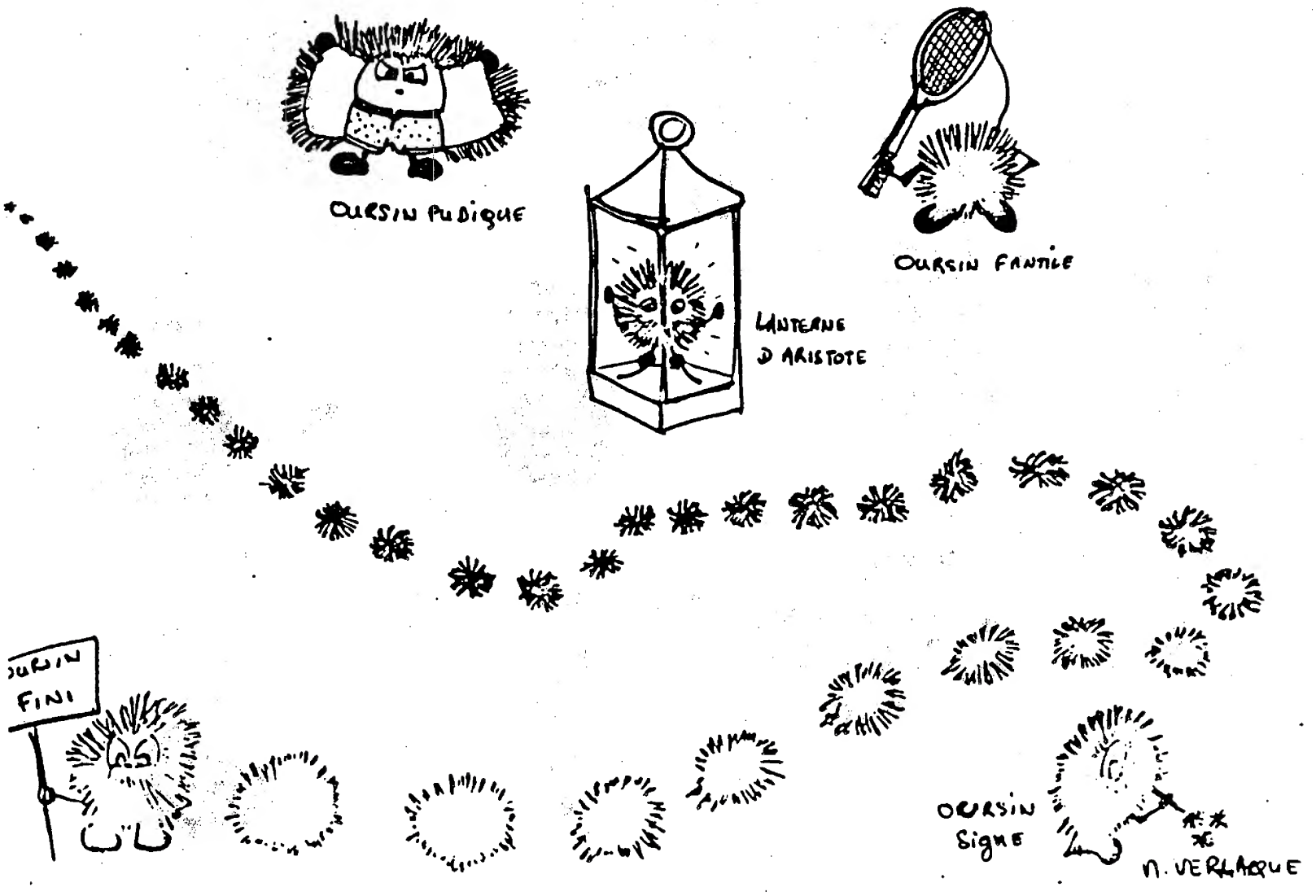


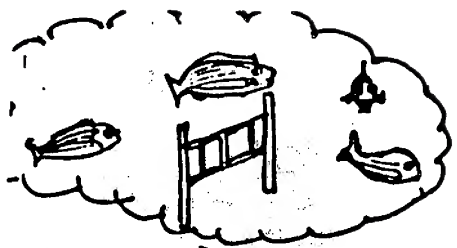
OURSIN TOTIQUE



OURSIN PIERRE

M. VERLAQUE
H. J.

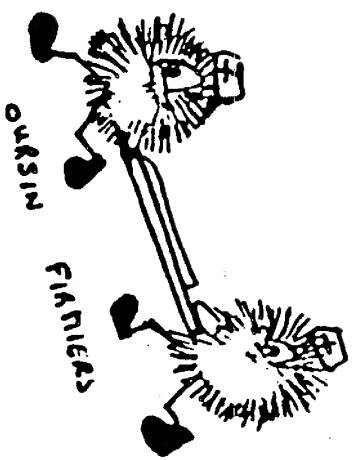

OURSIN PUBIQUE
LANTERNE D'ARISTOTE
OURSIN FANTILE
OURSIN FINI
OURSIN SIGNE
N. VERLHAQUE



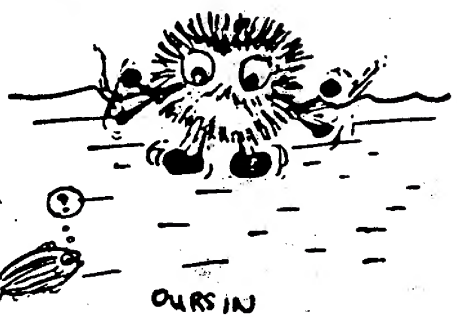
OURSIN SOMNIFIQUE

OURSIN COGNITO

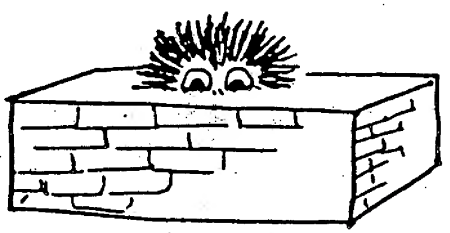
OURSIN FARCTUS



OURSIN FIANCIERS



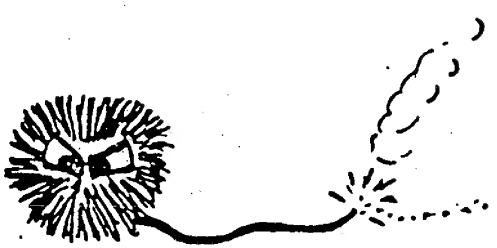
OURSIN SUBTERSIBLE



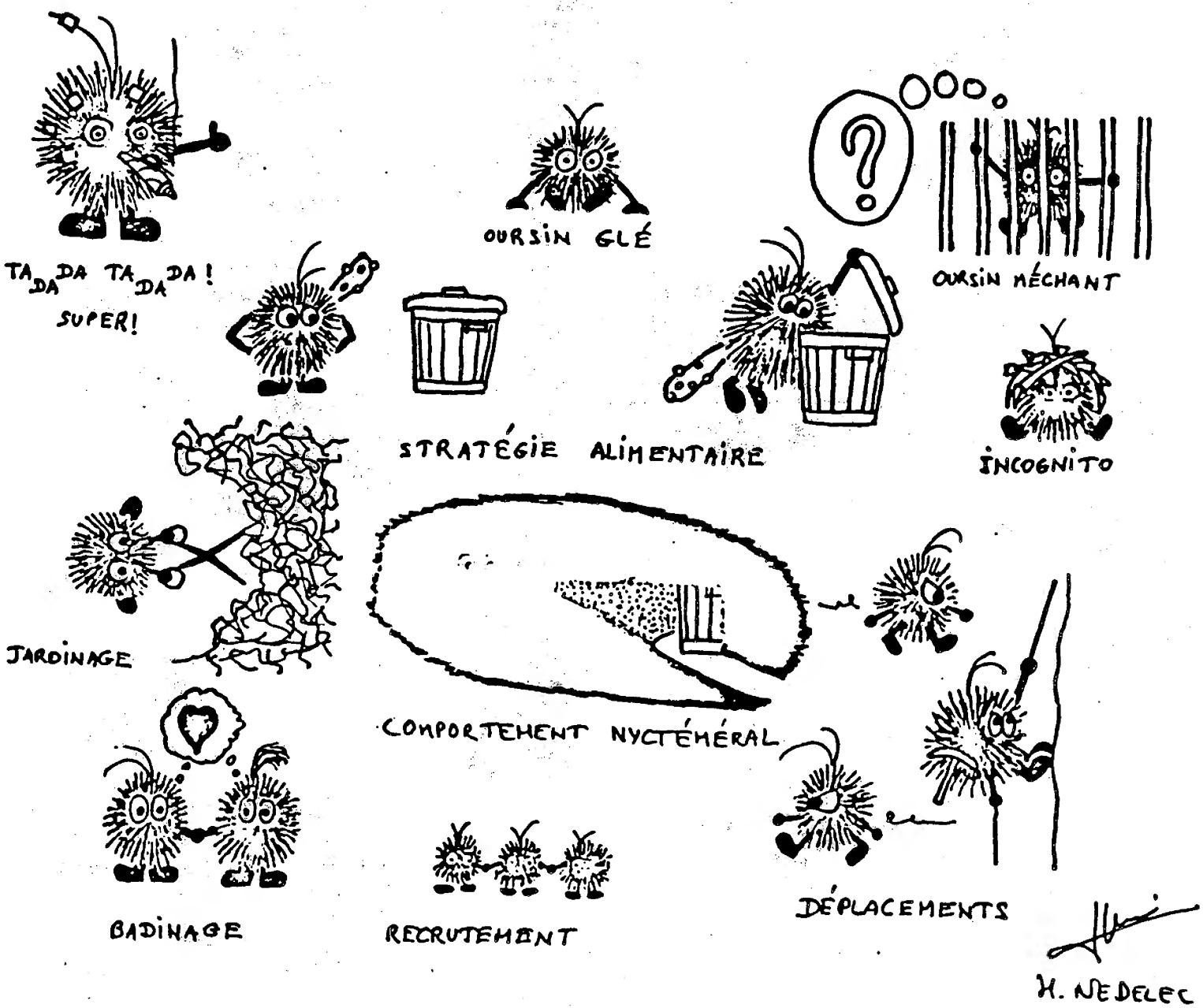
OURSIN CRUSTÉ

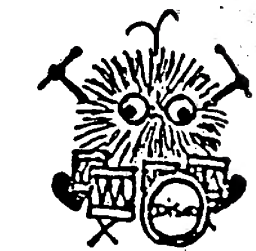
OURSIN BERBE

OURSIN VERSE

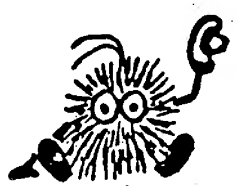


OURSIN FERNAL

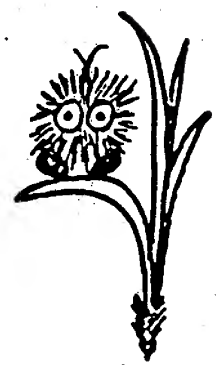

TA DA DA TA DA DA !
SUPER!
OURSIN GLÉ
OURSIN MÉCHANT
STRATÉGIE ALIMENTAIRE
INCOGNITO
JARDINAGE
COMPORTEMENT NYCTÉMÉRAL
BADINAGE
RECRUTEMENT
DÉPLACEMENTS
H. NEDELEC



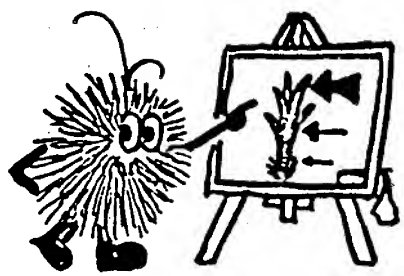
RYTHMES ALIMENTAIRES



EXCRÉTION

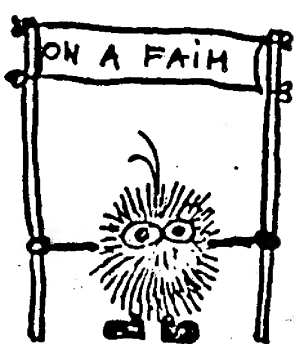


OURSIN CHOUETTE

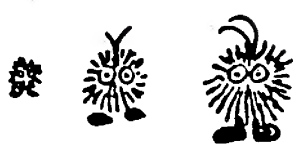


LE BON CHOIX POUR LA PANSE

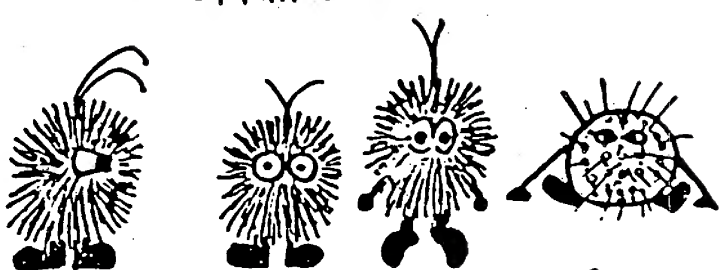
LA JUNGLE



OURSIN JICAT



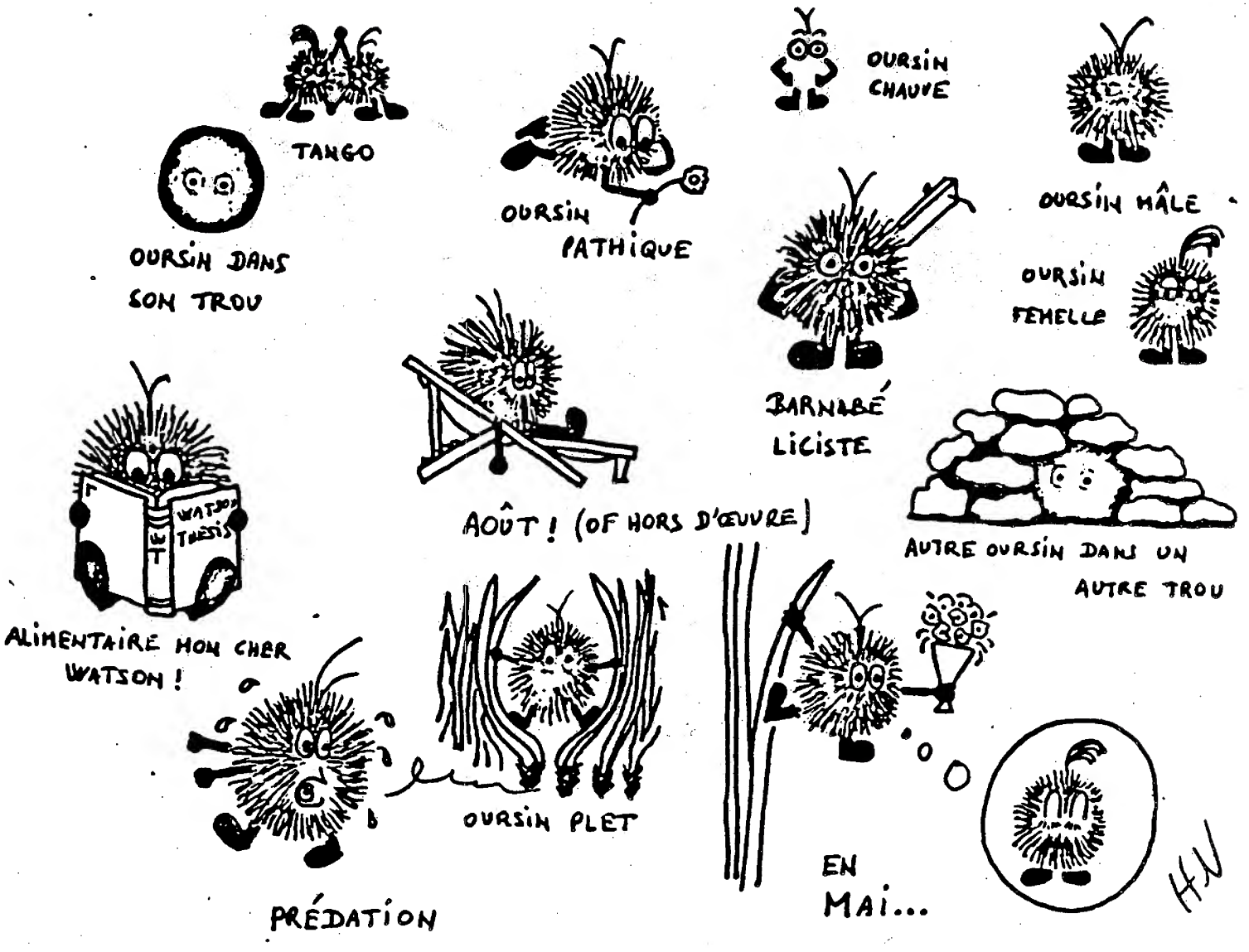
CROISSANCE

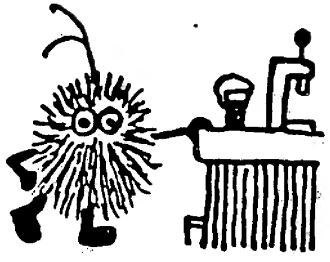


SÉLECTION

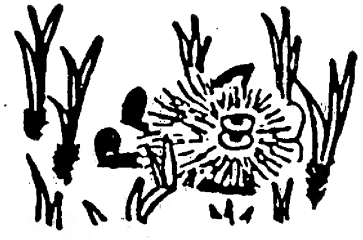
SYSTÈME DÉFENSIF

H.NEDELEC


TANGO
OURSIN DANS SON TROU
OURSIN PATHIQUE
OURSIN CHAUVE
OURSIN MÂLE
OURSIN FEMELLE
BARNABÉ LICISTE
AOÛT ! (OF HORS D'ŒUVRE)
AUTRE OURSIN DANS UN AUTRE TROU
ALIMENTAIRE MON CHER WATSON !
OURSIN PLET
PRÉDATION
EN MAI...



CONSOMMATION

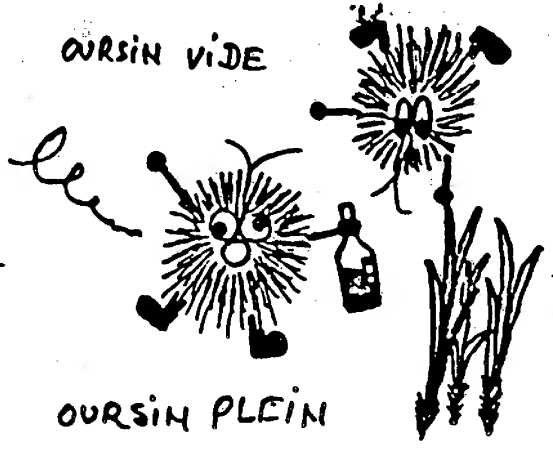


PRODUCTION PRIMAIRE

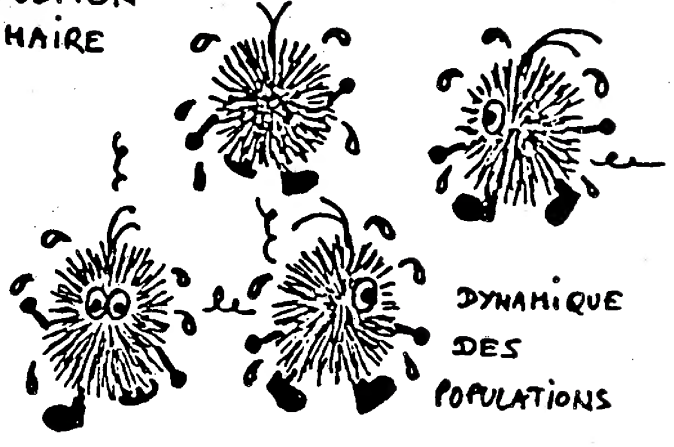
OURSIN BOLIQUE

LE COMBAT POUR LA VIE

OURSIN VIDE

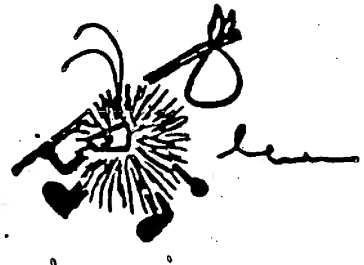


OURSIN PLEIN

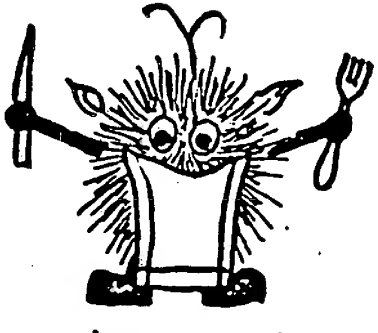


DYNAMIQUE DES POPULATIONS

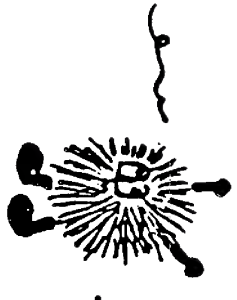
OURSIN GEUR



HIGRATION



OURSIN COMESTIBLE



OURSIN CORE

- "Each kind of environment was found to have its own peculiar Echinoid fauna, each species except the most abundant being very restricted to one sort of habitat in its adult condition." Bedford, F.P. 1900. On echinoderms from Singapore and Malacca. Proc. Sci. Meetings Zool. Soc. Lond. 271-299.

- Self and non-self
Deichmann, E. 1921. On some cases of multiplication by fission and of coalescence in holothurians: with notes on the synonymy of Actinopyga parvula. Papers from Dr. Th. Mortensen's Pacific Expedition 1914-16. IX. Saertryk of Vidensk. Medd. fra. Dansk naturh. Foren. 73, 199-214.
Histological examination showed the integument of different individuals of Thyone gibber (Sel.) from Taboga, Gulf of Panama were completely fused. The coalescence is restricted to the integument. "...--just like the men's leg in the old Danish tale of the Molbos--...ultimately first the pedicels and then the skin itself of the individuals fuse together....Monticelli...has seen two pieces of the skin from Cucumaria planci (Brand) fuse together."

- Thoughts of A. Agassiz (from: Letters and recollections of Alexander Agassiiz with a sketch of his life and work. Houghton Mifflin Company, Boston. 1913):
p 120. letter to Charles Darwin. Cambridge, December 9, 1872.
"...the great fire of Boston, and which has affected us all more or less seriously. I have been hit pretty hard, not in a money way, but what is worse infinitely. I have lost a year's work by the destruction of six Plates of anatomy with the original drawing, of which I have not even a sketch...In addition I lost all the stones of the first parts of the "Revision of the Echini'; ...I feel neither the heart nor have I time to start again and do all this again just as it was completed.
p. 159. Letter to Wyville Thonson. Newport, July 1, 1879.
"I felt when I got through the Challenger Echini that I never wanted to see another sea-urchin, and hoped that they would gradually become extinct."
p 181. Letter to Wyville Thomson. Barbados, March 11, 1879.
"As for the other Pentacrinus...What do you think of bringing up in one haul 124 of them? I thought I should jump overboard when the tangles came up loaded with them. This brings me to ask if you want any more for dissection."

- Earliest representations of echinoderms in art
"The sea-urchin...(was a subject) used by these artists (the Mykenaean population of Cyprus and Crete, 800-1000 BC) for which they found terrestrial counterparts...the sea-urchin was a hedgehog..." Lankaster, Sir Ray. 1925. Some diversions of a naturalist. Methuen & Co., Ltd., London.

Ouvrez les oursins. Agrandissez le trou où se joignent les darnes afin de laisser égoutter l'eau. Un quart d'heure après, sortez délicatement ces darnes et glissez-les dans les œufs. Cela fait, battez votre omelette vivement et, dès que l'huile est très chaude, jetez-la dans la poêle à feu très vif. Ramenez-la du bord au centre à mesure qu'elle gonfle. Tenez-la baveuse. Pliez-la en chausson. Servez très chaud.

Ces deux recettes sont extraites d'une revue marseillaise d'il y a cinquante ans.

On peut encore préparer en omelette les orties de mer petits zoophytes marins, qu'il est toutefois recommandé de débarrasser au préalable de ses propriétés urticantes en les faisant macérer dans un peu de vinaigre et en les rinçant ensuite. Supprimez les tentacules, nettoyez soigneusement les orties, égouttez-les. Saupoudrez-les de farine et mettez-les à cuire à la poêle dans quelques cuillerées d'huile. Quand elles sont frites des deux côtés, et pour cela il convient de les retourner en une seule fois à l'aide de ce que les Provençaux appellent un *viro-trouchio*, ou encore *viro-pèis* (tourne-poisson), comme il s'en fabrique encore à Aubagne, ajoutez les œufs battus. Retournez l'omelette, afin qu'elle soit cuite également des deux côtés. D'autres petits poissons, comme l'athérine joël (*sauclet*) ou le cabasson (*cabassoun*) font aussi d'excellentes omelettes. Il convient évidemment de les frire au préalable sans les étêter, ni les vider, ni les écailler.

R. Jouveau. 1976. La cuisine provençale de tradition populaire. Imprimerie Bene, Nimes. (p.137)

De l'oursin, quand il n'a pas séjourné sur des fonds ocheux tapissés d'algues, tout se mange : la bête ouverte ux ciseaux présente ses darnes d'un beau vermillon u'entourent des débris noirâtres d'algues qui ne sont as à dédaigner. Mieux qu'à la petite cuiller, le vrai Marseillais se sert des mouillettes pour recueillir l'intérieur e ce mollusque.

Un déjeuner d'oursins a reçu en Provence le nom « *oursinado* ».

(p.77)

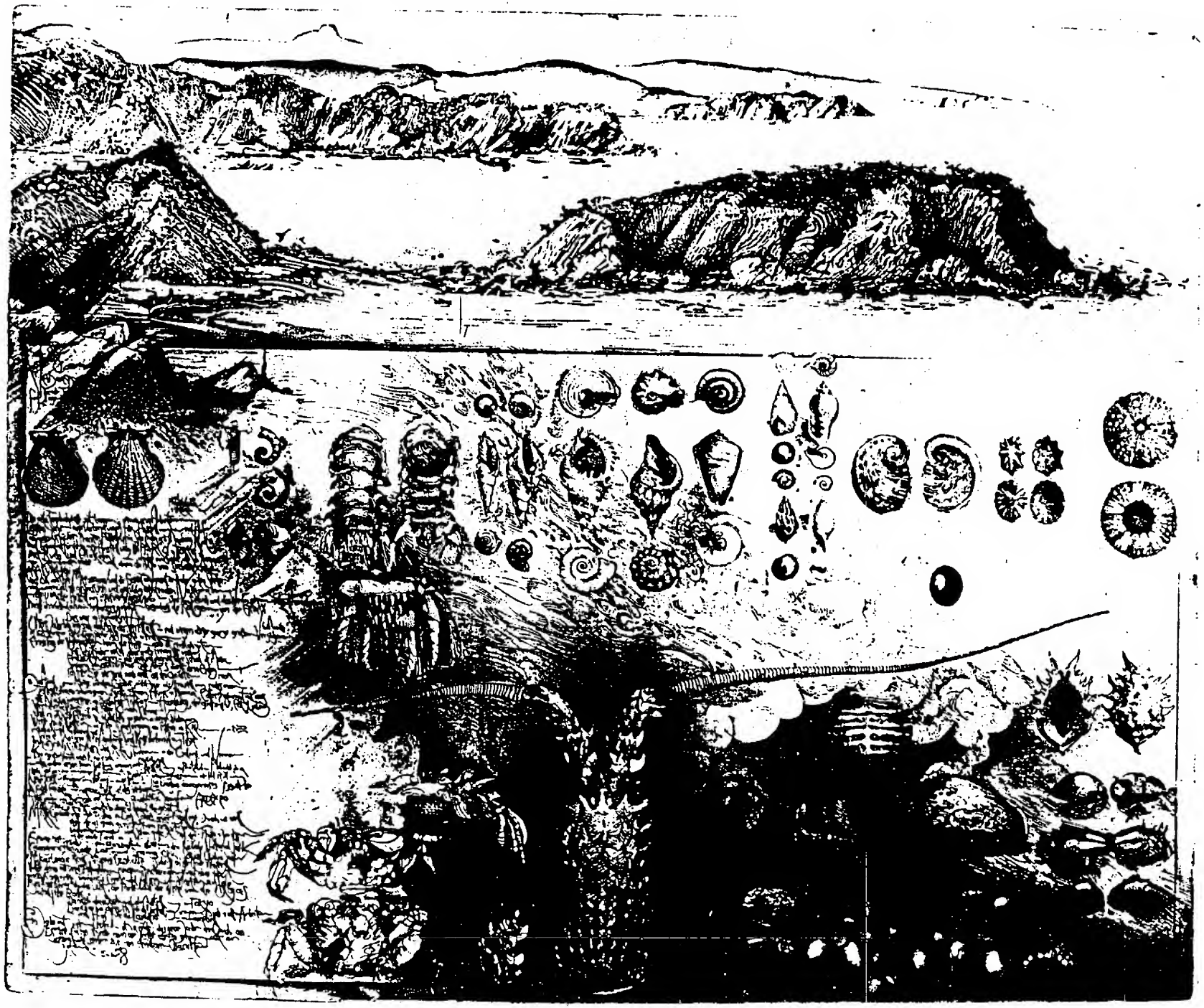
- Starfish as food

"An interesting accident befell the cat of a friend and with whom I had left a few of the Sunstars (Solaster papposa) to look at. During the tea-hour, the feline member of the family managed to devour the half of one. I half an hour's time she could not walk straight, and groaned piteously. After a collapse of several hours' duration she got upon her feet and could just manage to stagger along; her jaws, which had become rigid, relaxed. The symptoms were altogether those of poisoning. Next day, however, she was herself again, and I received emphatic orders never to bring Starfish there again." Patterson, A.H. 1904. Notes of an east coast naturlist. Methuen & Co., London.

- A matter of point of view:
1. Wyville Thomson, C. 1877. The voyage of the 'Challenger'. The Atlantic. A preliminary account of the general results of theexploring voyage of H.M.S. 'Challenger' during the years 1873 and the early part of the year 1876. vol. 2. Macmillan & Co., London.
"...we trawled three times at a depth of about 400 fathoms, and got a large number of very interesting forms...Among the special seizes were two specimens of the rare little crinoid Rhizocumis lofotensis, each infested by several individuals of a species of Stylifer, and a single example of a fine undescribed species of the genus Pentacrinus..."
2. Campbell, Lord George. 1876. Log letters from "The Challenger". Macmillan and Co.
"On the 3rd we arrived at St. Michaels', having dredged on the way in 900 fathoms, and got a few starfish and a large dead crinoid. Crinoids being one of the most rare and wished-for things, we dredged again in hopes of more, but unsucessfully. We have scarecly got one crinoid the whole time we have been away, which disappoints and dismays science."

- Echinoderms in poetry (in Dakin)
The river is within us, the sea is all about us;
The sea is the land's edge also; the granite
Into which it reaches, the beaches where it tosses
Its hint of earlier and other creation;
The starfish, the hermit crab, the whales's backbone;
The pools where it offers to our curiosity
The more delicate algae and the sea anemone.
It tosses up our losses, the torn spine
The shattered lobster pot, the broaken oar
And the gear of foreign dead men. The sea has many voices,
Many gods and many voices.
T.S. Eliot

And, lilting where the laver lingers,
The Starfish trips on all her fingers;
Where, 'neath his myriad spines ashock,
The sea-egg ripples down the rock...
Kipling.



communicated by
Malcolm Shick

Jörg Schmaissen: "Dray and Jimmy's Toilet" (1986)
(etching)

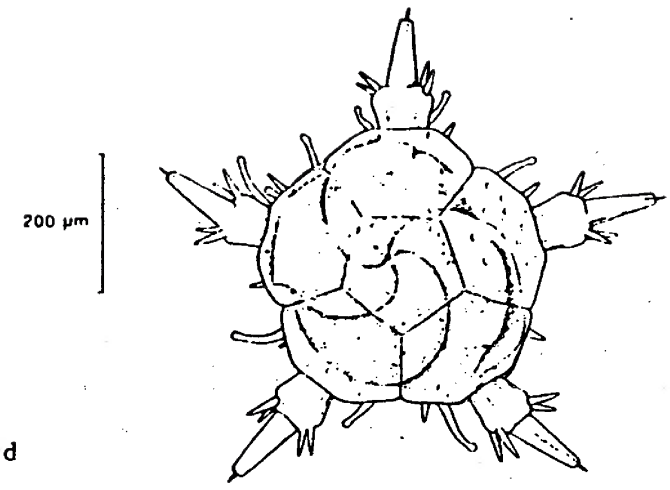


FIG. 6. Juvenile *Amphiura filiformis* with prey (foraminiferan).

- Food of young Amphiura (Muss 1981): "Very spectacular were the cases where tiny brittle stars had swallowed objects with a diameter close to their own...For an Amphiura with no arms, only ten tube-feet, and a very primitive mouth apparatus it must involve a considerable effort to overcome a disc-shaped foraminifera of about its own size."

- Spawning of Amphiura (Mortensen): "The normal position of these Ophiurids is...this that the disk is completely buried in the mud....two-three centimeters below the surface of the mud. When they want to discharge their sexual products, they rise over the surface of the mud so that the disk is kept about two centimenters (sic) above the surface, resting on the five arm bases as pillars, the arm points at the same time disappearing below the surface.
...The males were the first to discharge their sperm...having finished... they gently sank down into the mud, assuming their normal position. Very soon after... some females rose over the surface ...and at once began to shed the eggs."

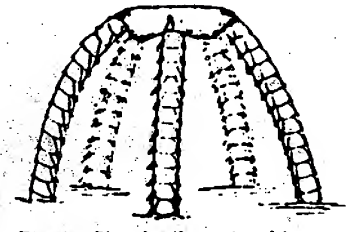


Fig. 1. Sketch of an *Amphiura* in its spawning position.

- 'isoyake'
'The term "isyoake" was given to the great decrease or disappearnce of useful seaweeds by Japanese seaweed fishermen'. Causes attributed include decrease in water temeprature, river runoff, overharvesting, oligotrphy, grazing by phycophagous animals.' (pp 246-250) Akatusuka, I. 1986. Japanese Gelidiales (Rhodophyta), especially Gelidium. Oceanogr. Mar. Biol. Ann. Rev. 24, 176-263.

- Parasitism
Young of Gorgonocephalus eats the skin of the adult to which it is attched. Fedotov (Uber eigenartigen Parasitismus bei Stachelhautern) Z. f. Morph. u. Oekol. d. Tiere. 22. 1931.